Appendix G
Final CHART Assessment for the Central Valley Steelhead ESU

ESU Description

The CV Steelhead ESU was listed as a threatened species in 1998 (63 FR 13347; March 19, 1998). The ESU includes all naturally spawned populations of steelhead in the Sacramento and San Joaquin Rivers and their tributaries, but excludes steelhead from San Francisco and San Pablo Bays and their tributaries. Based on an updated status review (NMFS 2003a) and an assessment of hatchery populations located within the range of the ESU (NMFS 2003b), NMFS recently proposed that the ESU remain listed as a threatened species (69 FR 33102; June 14, 2004). In addition, we proposed that resident O. mykiss co-occurring with anadromous populations below impassable barriers (both natural and man made) and two artificially propagated populations (Coleman National Fish Hatchery on Battle Creek and Feather River Hatchery on the Feather River) also be included in the CV Steelhead ESU. Two artificially propagated steelhead stocks reside within the historical geographic range of the ESU (Nimbus Fish Hatchery on the American River and Mokelumne River Hatchery on the Mokelumne River), but are not considered part of the ESU because they are derived from out-of-ESU broodstock (69 FR 33102; June 14, 2004). NMFS recently determined that a 6-month extension in making a final listing determination for this and all other west coast steelhead/O. mykiss ESUs was warranted (70 FR 37219; June 28, 2005). A Technical Recovery Team has been established for the Central Valley recovery planning domain and had developed a preliminary assessment of the historic and extant population structure of this ESU. Additional technical recovery planning work is underway to identify viability criteria for independent populations and the ESU as a whole.

CHART Area Assessments

The preliminary CHART assessment for this ESU (NMFS 2004b) was prepared to support our December 10, 2004, critical habitat proposal (69 FR 71880). This final CHART assessment considered new information received during the public comment period regarding fish distribution, habitat use, and watershed conservation value. Based on information received from the public comment process, the CHART made a limited

number of changes including: 1) the addition of approximately 6 miles of occupied habitat in several tributaries to HSA 550810, 2) the removal of approximately 3 miles of occupied habitat from HSA 552440, and 3) changed the conservation value of two HSAs (551510 and 552110) from low to medium.

The final CHART assessment for the CV Steelhead ESU addressed 25 CALWATER Hydrologic Units (HUs) or subbasins containing 67 occupied CALWATER HSAs (Figures G1 and G2). The assessment included four HSAs that encompass the San Francisco-San Pablo-Suisun Bay complex which represents a migratory corridor for this ESU (Figure G3). The HSAs were chosen as freshwater and estuarine critical habitat units because they provided a convenient and systematic way to organize the CHART's watershed assessments for this and other ESUs. Information presented below for individual HUs (size, counties, total stream miles, occupied stream miles, and habitat use) were generated from GIS data sets compiled by NMFS Southwest Region and can be found in Table G1.

Unit 1. Tehama Subbasin (HU#5504)

The Tehama HU is located in the north central portion of the ESU and includes portions of the mainstem Sacramento River, the lower portions of two westside tributaries (Thomes and Stony Creeks), and the lower portions of three eastside tributaries (Mill Creek, Deer Creek, and Pine Creek). The HU encompasses an area approximately 1,119 mi^2 and occurs primarily in Tehama County, but also in portions of Butte and Glenn Counties. The HU contains 2 HSAs, both of which are occupied, and 1,879 stream miles (at 1:100,000 hydrography). Fish distribution and habitat use data compiled by NMFS biologists identify approximately 228 miles of occupied riverine in the 2 occupied HSAs (Table G1). The CHART concluded that these occupied HSAs contained one or more PCEs (i.e. spawning, rearing, and/or migratory habitat) and identified several management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied riverine or estuarine habitat for each HSA watershed that contains spawning/rearing, rearing/migration, or migration PCEs, as well as management activities that may affect the PCEs in each HSA. Map G1 depicts the specific areas in this HU that are occupied by the ESU and were considered for critical habitat designation. The CHART did not identify any unoccupied habitat areas in this subbasin that may be essential for the conservation of the ESU.

Unit 2. Whitmore Subbasin (HU#5507)

The Whitmore HU is located in the northeastern part of the ESU and includes portions of upper Battle Creek (North and South Forks), upper Bear Creek, and the Cow Creek watershed. The HU encompasses an area approximately 913 mi^2 and occurs in Shasta and Tehama Counties. This HU contains 7 HSAs, all of which are occupied, and approximately 990 stream miles (at 1:100,000 hydrography). Fish distribution and habitat use data compiled by NMFS biologists identify approximately 177 miles of occupied riverine habitat in the 7 occupied HSAs (Table G1). The CHART concluded that these occupied areas contained one or more PCEs (i.e. spawning, rearing, or migratory habitat) and identified management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied riverine or estuarine habitat identified for each HSA watershed that contains spawning/rearing, rearing/migration, or migration PCEs, as well as management activities that may affect the PCEs in each HSA. Map G2 depicts the specific areas in this HU that are occupied by the ESU and were considered for critical habitat designation. The CHART did not identify any unoccupied habitat areas in this subbasin that may be essential for the conservation of the ESU.

Unit 3. Redding Subbasin (HU# 5508)

The Redding HU is located in the northernmost part of the ESU and includes portions of the upper Sacramento River mainstem, westside tributaries including Cottonwood Creek (portions of both the Middle and South Forks) and Clear Creek, and the lower portions of several eastside tributaries (Cow Creek, Bear Creek, and lower Battle Creek). The HU encompasses an area of approximately 705 mi^2 and occurs in Shasta and Tehama Counties. This HU contains 2 HSAs, both of which are occupied, and a total of 1,030 miles of streams (at 1:100,000 hydrography). Fish distribution and habitat use data compiled by NMFS biologists identify approximately 228 miles of occupied riverine habitat in the 2 occupied HSAs (Table G1). The CHART concluded that these occupied areas contained one or more PCEs (i.e. spawning, rearing, or migratory habitat) and identified management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied riverine or estuarine habitat identified for each HSA watershed that contains spawning/rearing, rearing/migration, or migration PCEs, as well as management activities that may affect the PCEs in each HSA. Map G3 depicts the specific areas in this HU that are occupied by the ESU and were considered for critical habitat designation. The CHART did not identify any unoccupied habitat areas in this subbasin that may be essential for the conservation of the ESU.

Unit 4. Eastern Tehama Subbasin (HU# 5509)

The Eastern Tehama HU is located in the northeastern portion of the ESU and includes portions of several significant watersheds including Mill Creek, Deer Creek, Antelope Creek, and the upper portion of Big Chico Creek. The HU encompasses an area of approximately 896 mi^2 and occurs primarily in Tehama County with small portions in Butte, Shasta and Plumas Counties. This HU contains 10 HSAs, 6 of which are occupied, and a total of 1,049 miles of streams (at 1:100,000 hydrography). Fish distribution and habitat use data compiled by NMFS biologists identify approximately 151 miles of occupied riverine habitat in the 6 occupied HSAs (Table G1). The CHART concluded that these occupied areas contained one or more PCEs (i.e. spawning, rearing, or migratory habitat) for this ESU and identified management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied riverine and estuarine habitat for the HSAs that contains spawning/rearing, rearing/migration, or migration PCEs, as well as the management activities that may affect the PCEs in each HSA. Map G4 depicts the specific areas in this HU that are occupied by the ESU and were considered for critical habitat designation.

The CHART also concluded that inaccessible stream reaches in Upper Deer Creek above Upper Deer Creek Falls may be essential for the conservation of this ESU (NMFS 2004g). Historically, steelhead had access to this area when conditions allowed fish to pass the falls. A ladder was constructed in late 1940s but it provides poor attraction and passage conditions and has been closed since 2001. Deer Creek currently supports a population of steelhead and improved passage conditions into this reach would increase the amount of spawning, rearing and migration habitat available to the ESU.

Unit 5. Sacramento Delta (HU# 5510)

The Sacramento Delta HU is located in the south-central portion of the ESU. The HU encompasses an area of approximately 446 mi^2 and occurs in portions of Yolo, Sacramento, and Solano Counties. This HU contains a single HSA which is occupied, and approximately 355 miles of streams (at 1:100,000 hydrography). Fish distribution and habitat use data compiled by NMFS biologists identify approximately 194 miles of occupied riverine habitat in this HSA (Table G1). The CHART concluded that these occupied areas contained one or more PCEs (i.e. spawning, rearing, or migratory habitat) for this ESU and identified management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied riverine/estuarine habitat identified for each HSA watershed that contains spawning/rearing, rearing/migration, or migration PCEs, as well

as management activities that may affect the PCEs in each HSA. Map G5 depicts the specific areas in this HU that are occupied by the ESU and were consideration for critical habitat designation. The CHART did not identify any unoccupied habitat areas in this subbasin that may be essential for the conservation of the ESU.

Unit 6. Valley Putah-Cache Subbasin (HU# 5511)

The Valley Putah-Cache HU is located in the south-central portion of the ESU and includes a portion of the Yolo Bypass and portions of west side tributaries Putah, Ulatis, and Alamo Creeks. This HU encompasses an area of approximately 961 mi^2 and occurs primarily in Yolo and Solano Counties. This HU contains 3 HSAs, 2 of which are is occupied, and 751 miles of streams (at 1:100,000 hydrography). Portions of these occupied HSAs are outside the boundary of ESU and the unoccupied HSA is completely outside the ESU boundary. Fish distribution and habitat use data compiled by NMFS biologists identify approximately 83 miles of occupied riverine habitat in the occupied HSAs (Table G1). The CHART concluded that the occupied areas contained one or more PCEs (i.e. spawning, rearing, or migratory habitat) for this ESU and identified management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied riverine or estuarine habitat identified for each HSA watershed that contains spawning/rearing, rearing/migration, or migration PCEs, as well as management activities that may affect the PCEs in each HSA. Map G6 depicts the specific areas in this HU that are occupied by the ESU and were considered for critical habitat designation.

Within this subbasin, the team also concluded that unoccupied stream reaches in Middle Putah Creek from Solano Irrigation Dam to Monticello Dam may be essential to the conservation of this ESU (NMFS 2004g). Steelhead are thought to have historically utilized the upper watershed above Monticello Dam. There is currently a very small opportunistic population of steelhead in Lower Putah Creek, but habitat conditions in this area are not suitable for spawning or rearing. Providing fish passage past the Solano Irrigation Dam would provide access to suitable habitat for this ESU and efforts are currently underway to investigate the feasibility of providing passage beyond this dam. The team concluded that this unoccupied area may be essential to conservation of the ESU because populations of steelhead in the Central Valley are constrained by the lack of accessible habitat and access to this area would provide cold water rearing and spawning habitat for this population.

Unit 7. American River Subbasin (HU# 5514)

The American River HU is located in the eastern portion of the ESU and includes portions of upper Coon Creek, Doty Creek, and Auburn Ravine. This HU encompasses an area of approximately 1,642 mi^2 and occurs primarily in El Dorado and Placer Counties. This HU contains 15 HSAs all of which are outside the range of the ESU; however, one of the HSAs is partially occupied (#551422) by the ESU. There are 104 miles of streams (at 1:100,000 hydrography) in the occupied HSA, but fish distribution and habitat use data compiled by NMFS biologists identify only 20 miles of riverine habitat that is occupied HSA (Table G1). The CHART concluded that the occupied areas contained one or more PCEs (i.e. spawning, rearing, or migratory habitat) for this ESU and identified management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied riverine or estuarine habitat identified for each HSA watershed that contains spawning/rearing, rearing/migration, or migration PCEs, as well as management activities that may affect the PCEs in each HSA. Map G7 depicts the specific areas in this HU that are occupied by the ESU and were considered for critical habitat designation. The CHART did not identify any unoccupied habitat areas in this subbasin that may be essential for the conservation of the ESU.

Unit 8. Marysville Subbasin (HU# 5515)

The Marysville HU is located in the central portion of the ESU and includes portions of the Feather and Yuba Rivers. This HU encompasses an area of approximately 417 mi^2 and occurs primarily in Butte and Yuba Counties with smaller portions located in Sutter and Placer Counties. The HU contains 3 HSAs, all of which are occupied, and 562 miles of streams (at 1:100,000 hydrography). Fish distribution and habitat use data compiled by NMFS biologists identify approximately 75 miles of occupied riverine habitat in the 3 HSAs (Table G1). The CHART concluded that these occupied areas contained one or more PCEs (i.e. spawning, rearing, or migratory habitat) for this ESU and identified management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied riverine or estuarine habitat identified for each HSA watershed that contains spawning/rearing, rearing/migration, or migration PCEs, as well as management activities that may affect the PCEs in each HSA. Map G8 depicts the specific areas in this HU that are occupied by the ESU and were considered for for critical habitat designation.

The CHART did not identify any unoccupied habitat areas in this subbasin that may be essential for the conservation of the ESU. However, the team did conclude that

inaccessible stream reaches in the adjacent subbasin (in HU#5518) which contains the Upper Feather River above Oroville Dam may be essential to the conservation of this ESU (NMFS 2004g). Specifically, the team identified the following stream reaches above Oroville Dam that may be essential for conservation of this ESU: from Oroville Dam upstream along the West Branch of the Feather River to the vicinity of Kimshew Falls; along the North Fork of the Feather River upstream of the location of Lake Almanor; along the East Branch of the NF Feather River including Indian Creek and Spanish Creek; the South Middle Fork of the Feather River, and the South Fork of the Feather River upstream to the first natural impassible barrier. Steelhead (and spring-run chinook salmon) historically occurred in the Upper Feather River prior to Pacific Gas and Electric's hydroelectric development in the North Fork watershed and the construction of Oroville Dam. Construction of Oroville Dam extirpated the steelhead (and spring-run chinook) population in this upper watershed. The team concluded that spawning, rearing, an migratory habitat is available above Oroville Dam in these inaccessible stream reaches, but it is in better condition for steelhead than spring-run chinook salmon. The feasibility of providing fish passage past Oroville Dam is currently being evaluated through the ongoing FERC relicensing process for this facility. The team concluded this inaccessible habitat may be essential for the conservation of this ESU because the natural production of steelhead in the lower Feather River is limited by the substantial lack of suitable spawning and rearing habitat below Oroville Dam, and access to the unoccupied habitat above the dam would allow for expansion of the population in this watershed.

Unit 9. Yuba River Subbasin (HU# 5517)

The Yuba River Santa Clara HU is located in the central and eastern portion of the ESU and includes part of the upper Yuba River watershed (Dry and Deer Creeks). This HU encompasses an area of approximately 1,436 mi^2 and occurs in several Counties including: Butte, Nevada, Placer, Plumas, Sierra, and Yuba. The HU contains 16 HSAs, 4 of which are occupied, and 2,048 miles of streams (at 1:100,000 hydrography); however, all but 2 HSAs are entirely outside the ESU boundary. Fish distribution and habitat use data compiled by NMFS biologists identify only approximately 22 miles of occupied riverine habitat in the 4 occupied HSAs (Table G1). The CHART concluded that these occupied areas contained one or more PCEs (i.e. spawning, rearing, or migratory habitat) for this ESU and identified management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied riverine or estuarine habitat for each HSA watershed that contains spawning/rearing, rearing/migration, or migration PCEs, as well as management activities that may affect the PCEs in each HSA. Map G9

depicts the specific areas in this HU that are occupied by the ESU and were considered for critical habitat designation.

The CHART concluded that inaccessible stream reaches of the Upper Yuba River above Englebright Dam may be essential to the conservation of this ESU, including those upstream reaches on the North Yuba to New Bullards Bar Dam, on the Middle Yuba to Milton Dam, and on the South Yuba to Lake Spaulding (NMFS 2004g). All three forks of the Upper Yuba River historically supported populations of steelhead (and spring chinook). The team determine this area may be essential for conservation because it provides one of the largest areas of suitable habitat in the Central Valley that can be accessed by providing passage at one relatively small dam. The Lower Yuba is also considered to have a good "seed" population of steelhead (and spring chinook) and the population is considered relatively free of hatchery influence. A large, multi-million dollar study program is underway through the CALFED Ecological Restoration Program to evaluate the feasibility of restoring anadromous salmonid populations to the Upper Yuba River.

Unit 10. Valley-American Subbasin (HU# 5519)

The Valley-American HU is located in the central-eastern part of the ESU and includes portions of the American River and lower Auburn Ravine. This HU encompasses an area of approximately 958 mi^2 and occurs primarily in Placer, Sacramento, Sutter, and Yuba Counties. The HU contains 4 HSAs, only 2 of which are occupied, and approximately 1,188 miles of streams (at 1:100,000 hydrography). Fish distribution and habitat use data compiled by NMFS biologists identify approximately 187 miles of occupied riverine habitat in the 2 HSAs (Table G1). The CHART concluded that these occupied areas contained one or more PCEs (i.e. spawning, rearing, or migratory habitat) for this ESU and identified management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied riverine or estuarine habitat identified for each HSA watershed that contain spawning/rearing, rearing/migration, or migration PCEs, as well as management activities that may affect the PCEs in each HSA. Map G10 depicts the specific areas in this HU that are occupied by the ESU and were considered for critical habitat designation. The CHART did not identify any unoccupied habitat areas in this subbasin that may be essential for the conservation of the ESU.

Unit 11. Colusa Basin Subbasin (HU# 5520)

The Colusa Basin HU is located in the central portion of the ESU and includes portions

of the mainstem Sacramento River, lower Butte Creek, the Butte Creek-Sutter Bypass and Little Chico Creek. This HU encompasses an area of approximately 2,767 mi^2 and occurs in portions of Butte, Colusa, Glenn, Sutter, and Yolo Counties. The HU contains 5 HSAs, 3 of which are occupied, and 2,815 miles of streams (at 1:100,000 hydrography) although most of these stream miles are in unoccupied HSAs. Fish distribution and habitat use data compiled by NMFS biologists identify approximately 285 miles of occupied riverine habitat, including the Sutter Bypass, in the 3 HSAs (Table G1). The CHART concluded that these occupied areas contained one or more PCEs (i.e. spawning, rearing, or migratory habitat) for this ESU and identified management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied riverine or estuarine habitat identified for each HSA watershed that contains spawning/rearing, rearing/migration, or migration PCEs, as well as management activities that may affect the PCEs in each HSA. Map G11 depicts the specific areas in this HU that are occupied by the ESU and were considered for the critical habitat designation. The CHART did not identify any unoccupied habitat areas in this subbasin that may be essential for the conservation of the ESU.

Unit 12. Butte Creek Subbasin (HU# 5521)

The Butte Creek HU is located in the northeastern portion of the ESU and contains portions of Butte Creek and Little Chico Creek. This HU encompasses an area of approximately 207 mi^2 and occurs primarily in Butte County. The HU contains 3 HSAs, all of which are occupied, and 310 miles of streams (at 1:100,000 hydrography). Fish distribution and habitat use data compiled by NMFS biologists identify approximately 38 miles of occupied riverine habitat in the single occupied HSA (Table G1). The CHART concluded that these occupied areas contained one or more PCEs (i.e. spawning, rearing, or migratory habitat) for this ESU and identified management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied riverine or estuarine habitat identified for each HSA watershed that contains spawning/rearing, rearing/migration, or migration PCEs, as well as management activities that may affect the PCEs in each HSA. Map G12 depicts the specific areas in this HU that are occupied by the ESU and were considered for critical habitat designation.

The CHART also concluded that inaccessible reaches of Upper Butte Creek above Centerville Dam upstream to Butte Meadow may be essential to the conservation of this ESU (NMFS 2004g). It is uncertain whether this area was historically used by the steelhead, but resident rainbow trout were historically present and still occur above

Centerville Diversion Dam. Spawning, rearing, and migration habitat is present and thought to be in good condition. The team believed this area may be essential for conservation because current steelhead spawning in this watershed is all below an elevation of 1,000 ft. High water temperatures in the lower portion of Butte Creek have led to significant spring-run chinook pre-spawning mortalities in recent years, and the team concluded that improved fish passage over the Centerville Diversion Dam would increase the range for both the-spring run chinook and steelhead ESUs, as well as reduce the risk of adult losses in the lower stream reaches. The team expects that feasibility of passage at the Centerville Diversion Dam will be evaluated through the upcoming FERC re-licensing process for the facility.

Unit 13. Ball Mountain Subbasin (HU# 5523)

The Ball Mountain HU is located in the northwestern portion of the ESU and includes a portion of upper Thomes Creek and associated tributaries. This HU encompasses an area of approximately 334 mi^2 and occurs almost entirely in Tehama County. The HU contains 3 HSAs, only one of which is occupied, and 521 miles of streams (at 1:100,000 hydrography). Fish distribution and habitat use data compiled by NMFS biologists identify approximately 41 miles of occupied riverine habitat in the one occupied HSA (Table G1). The CHART concluded that these occupied areas contained one or more PCEs (i.e. spawning, rearing, or migratory habitat) for this ESU and identified management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied riverine and estuarine habitat identified for each HSA watershed that contains spawning/rearing, rearing/migration, or migration PCEs, as well as management activities that may affect the PCEs in each HSA. Map G13 depicts the specific areas in this HU that are occupied by the ESU and were considered for critical habitat designation. The CHART did not identify any unoccupied habitat within this subbasin that may be essential for the conservation of this ESU.

Unit 14. Shasta Bally Subbasin (HU# 5524)

The Shasta Bally HU is located in the northwestern part of the ESU and includes portions of South Fork Cottonwood Creek and Beegum Creek among others. This HU encompasses an area of approximately 905 mi^2 and occurs primarily in Shasta and Tehama Counties. The HU contains 9 HSAs, 5 of which are occupied, and approximately 1,003 miles of streams (at 1:100,000 hydrography). Fish distribution and habitat use data compiled by NMFS biologists identify approximately 119 miles of occupied riverine habitat in the 5 HSAs (Table G1). The CHART concluded that these

occupied areas contained one or more PCEs (i.e. spawning, rearing, or migratory habitat) for this ESU and identified management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied riverine or estuarine habitat identified for each HSA watershed that contains spawning/rearing, rearing/migration, or migration PCEs, as well as management activities that may affect the PCEs in each HSA. Map G14 depicts the specific areas in this HU that are occupied by the ESU and were considered for critical habitat designation. The CHART did not identify any unoccupied habitat within this subbasin that may be essential for the conservation of this ESU.

Unit 15. North Valley Floor Subbasin (HU# 5531)

The North Valley Floor HU is located in the southeastern portion of the ESU and includes portions of the Calaveras, Mokelumne, and Cosumnes Rivers. This HU encompasses an area of approximately 1,378 mi^2 and occurs primarily in San Joaquin, Sacramento, and Calaveras counties. The HU contains 5 HSAs, 3 of which are occupied, and approximately 2,195 miles of streams (at 1:100,000 hydrography). Fish distribution and habitat use data compiled by NMFS biologists identify only about 189 miles of occupied riverine habitat in the 3 HSAs (Table G1). The CHART concluded that these occupied areas contained one or more PCEs (i.e. spawning, rearing, or migratory habitat) for this ESU and identified management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied riverine or esturarine habitat identified for each HSA watershed that contains spawning/rearing, rearing/migration, or migration PCEs, as well as management activities that may affect the PCEs in each HSA. Map G15 depicts the specific areas in this HU that are occupied by the ESU and were considered for critical habitat designation.

The CHART team also concluded that inaccessible stream reaches of the Upper Mokelumne River above Comanche Dam up to Bald Rock Falls (which is 7 miles above Electra Dam) may be essential to the conservation of this ESU (NMFS 2004g). Portions of this inaccessible habitat area extend into the Middle Sierra Subbasin (HU#5532). The Upper Mokelumne River historically supported large runs of spring-run chinook salmon , and since steelhead and spring-run chinook use similar habitats it is assumed this area also supported large runs of steelhead. Suitable habitat exists above Comanche Dam, but it has been altered by Comanche and Pardee reservoirs. The team concluded that this area may be essential for conservation of the ESU because steelhead have been extirpated from the area above the dam and recovery of this ESU may require the re-establishment of multiple independent populations of steelhead throughout the Central Valley.

Unit 16. Middle Sierra Subbasin (HU# 5532)

The Middle Sierra HU is located in the eastern portion of the ESU and contains portions of the upper Cosumnes River watershed. This HU encompasses an area of approximately 1,424 mi^2 and occurs primarily in El Dorado, Amador, and Calaveras counties. The HU contains 6 HSAs, 4 of which are occupied, and 2,545 miles of streams. Fish distribution and habitat use data compiled by NMFS biologists identify only about 70 miles of occupied riverine habitat in the 4 HSAs (Table G1). The CHART concluded that these occupied areas contained one or more PCEs (i.e. spawning, rearing, or migratory habitat) for this ESU and identified management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied riverine and estuarine habitat identified for each HSA watershed that contain spawning/rearing, rearing/migration, or migration PCEs, as well as management activities that may affect the PCEs in each HSA. Map G16 depicts the specific areas in this HU that are occupied by the ESU and were considered for critical habitat designation. As discussed for Unit 15 above, inaccessible portions of the upper Mokelumne River which may be essential to the conservation of this ESU extend into this subbasin. The CHART did not identify any other unoccupied areas that may be essential to the conservation of the ESU.

Unit 17. Upper Calavera Subbasin (HU# 5533)

The Upper Calaveras HU is located in the eastern portion of the ESU and contains portions of the Calaveras River. This HU encompasses an area of approximately 362 mi^2 and occurs entirely in Calaveras county. The HU contains 3 HSAs, only one of which is occupied, and approximately 743 miles of streams (at 1:100,000 hydrography); however, there are only 17 miles of streams in the occupied HSA. Fish distribution and habitat use data compiled by NMFS biologists identify only about 6 miles of occupied riverine habitat in the HSA (Table G1). The CHART concluded that these occupied areas contained one or more PCEs (i.e. spawning, rearing, or migratory habitat) for this ESU and identified management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied riverine and estuarine habitat identified for each HSA watershed that contains spawning/rearing, rearing/migration, or migration PCEs, as well as management activities that may affect the PCEs in each HSA. Map G17 depicts the specific areas in this HU that are occupied by the ESU and were considered for critical habitat designation. The CHART did not identify any unoccupied areas in this subbasin that may be essential to the conservation of the ESU.

Unit 18. Stanislaus River Subbasin (HU# 5534)

The Stanislaus River HU is located in the southeastern portion of the ESU and contains portions of the Stanislaus River. This HU encompasses an area of approximately 998 mi^2 and occurs primarily in Tuolumne, Calaveras and Alpine counties. The HU contains 8 HSAs; however, only one is in the ESU and occupied. The HU has approximately 1,708 miles of streams (at 1:100,000 hydrography); however, there are only 8 miles of streams in the single occupied HSA. Fish distribution and habitat use data compiled by NMFS biologists identify only about 3 miles of occupied riverine habitat in this HSA (Table G1). The CHART concluded that these occupied areas contained one or more PCEs (i.e. spawning, rearing, or migratory habitat) for this ESU and identified management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied riverine habitat identified for each HSA watershed that contains spawning/rearing, rearing/migration, or migration PCEs, as well as management activities that may affect the PCEs in each HSA. Map G18 depicts the specific areas in this HU that are occupied by the ESU and were considered for critical habitat designation.

Within this subbasin, the CHART also concluded that inaccessible stream reaches in the Middle Stanislaus River from Goodwin Dam to New Melones Dam may be essential to the conservation of this ESU (NMFS 2004g). The Stanislaus River historically supported a large population of spring-run chinook salmon and because steelhead utilize similar habitats it is likely that this River system also supported a large population of steelhead. Construction of Goodwin Dam blocked access of steelhead to those portions of the Stanislaus River above the Dam and largely extirpated this population. Recently, however, dam operations have provided conditions that allowed a few steelhead to spawn below Goodwin Dam. Suitable habitat is thought to exist above Goodwin Dam for steelhead and fish passage is considered feasible because of its low height. Based on preliminary technical recovery planning for ESUs in the central valley, recovery of this ESU will likely require the establishment of multiple independent steelhead populations particularly in the San Joaquin portion of the central valley.

Unit 19. San Joaquin Valley Floor Subbasin (HU# 5535)

The San Joaquin Valley Floor HU is located in the southeastern part of the ESU and contains portions of the Merced, Tuolumne, and Stanislaus Rivers. This HU encompasses an area of approximately 1,932 mi^2 and occurs primarily in Merced and Stanislaus counties. The HU contains 9 HSAs, several of which occur outside or partially outside the geographic boundary of the ESU. Of the 9 HSAs, 7 are occupied

and contain approximately 1,313 miles of streams (at 1:100,000 hydrography). Fish distribution and habitat use data compiled by NMFS biologists identify only about 159 miles of occupied riverine habitat in these HSAs (Table G1). The CHART concluded that these occupied areas contained one or more PCEs (i.e. spawning, rearing, or migratory habitat) for this ESU and identified management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied habitat identified for each HSA watershed that contains spawning/rearing, rearing/migration, or migration PCEs, as well as management activities that may affect the PCEs in each HSA. Map G19 depicts the specific areas in this HU that are occupied by the ESU and were considered for critical habitat designation.

Within this subbasin, the CHART also concluded that inaccessible stream reaches in the Middle Tuolumne River (between LaGrange and New Don Pedro Dams) and the Middle Merced River (between Crocker-Huffman and Exchequer Dams) may be essential to the conservation of this ESU (NMFS 2004g). Both rivers historically supported large populations of spring-run chinook salmon and because steelhead utilize similar habitat it is likely that these rivers also supported large populations of steelhead. Although current central valley steelhead populations are considered winter-run, habitat conditions in most San Joaquin basins, including the Tuolumne and Merced, may have historically supported summer steelhead. With construction of LaGrange and Crocker-Huffman Dams, spring-chinook in both basins were extirpated, and most likely steelhead as well. Although steelhead cannot access the upper watersheds in the Tuolumne and Merced Rivers, dam operations in both watersheds have provided conditions allowing steelhead to spawn downstream of LaGrange and Crocker-Huffman Dams. The team believes that suitable habitat conditions exist above LaGrange and Crocker-Huffman Dams and that there may be opportunities to provide fish passage at each facility. Based on preliminary technical recovery planning for ESUs in the central valley, it is likely that recovery of this ESU will require the establishment of multiple independent steelhead populations particularly in the San Joaquin portion of the central valley.

Units 20 (Tuolumne River; HU#5536) and 21 (Merced River; HU#5537)

The Tuolumne River and Merced River HUs contains portions of the upper Tuolumne and Merced Rivers that are mostly or entirely outside the range of the ESU. The 2 HUs contain 18 HSAs and over 2,800 miles of streams (at 1:100,000 hydrography), but all are unoccupied by the ESU. The CHART team did not identify any areas in these subbasins that may be essential for the conservation of the ESU.

Unit 22. Delta-Mendota Canal Subbasin (HU#5541)

The Delta-Mendota Canal HU is located in the southernmost portion of the ESU and contains portions of the Delta-Mendota Canal. This HU encompasses an area of approximately 1,220 mi^2 and occurs primarily in Merced, Fresno, and Stanislaus counties. The HU contains 2 HSAs, both of which are occupied, and fish distribution and habitat use data compiled by NMFS biologists (at 1:100,000 hydrography) identify only about 50 miles of occupied riverine habitat in these HSAs (Table G1). The CHART concluded that these occupied areas contained one or more PCEs (i.e. spawning, rearing, or migratory habitat) for this ESU and identified management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied riverine and estuarine habitat identified for each HSA watershed that contains spawning/rearing, rearing/migration, or migration PCEs, as well as management activities that may affect the PCEs in each HSA. Map G20 depicts the specific areas in this HU that are occupied by the ESU and were considered for critical habitat designation. The CHART did not identify any unoccupied areas in this subbasin that may be essential for the conservation of the ESU.

Unit 23. Middle West Side Subbasin (HU#5542)

The Middle West Side Subbasin is located in the southwestern portion of the ESU in the San Joaquin basin. The HU contain 4 HSAs and approximately 509 miles of streams (at 1:100,000 hydrography), but all are unoccupied by the ESU. The CHART did not identify any areas in these subbasins that may be essential for the conservation of the ESU.

Unit 24. North Diablo Range (HU# 5543)

The North Diablo Range HU is located in the southwestern portion of the ESU and includes portions of the south and central Delta channel complex. This HU encompasses an area of approximately 315 mi^2 and occurs primarily in Alameda, Contra Costa, and San Joaquin counties. The HU contains only a single HSA, which is partially occupied, and 336 miles of streams (at 1:100,000 hydrography). Fish distribution and habitat use data compiled by NMFS biologists identify only approximately 4 miles of occupied riverine/estuarine habitat in this HSA (Table G1). The CHART concluded that these occupied areas contained one or more PCEs (i.e. spawning, rearing, or migratory habitat) for this ESU and identified management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied riverine and/or estuarine habitat identified for each HSA watershed that contains spawning/rearing, rearing/migration, or migration

PCEs, as well as management activities that may affect the PCEs in each HSA. Map G21 depicts the specific areas in this HU that are occupied by the ESU and were considered for critical habitat designation. The CHART did not identify any unoccupied habitat areas in this subbasin that may be essential for the conservation of the ESU.

Unit 25. San Joaquin Delta Subbasin (HU# 5544)

The San Joaquin Delta HU is located in the southwestern portion of the ESU and includes portions of the south and central Delta channel complex. This HU encompasses an area of approximately 628 mi^2 and occurs primarily in Contra Costa and San Joaquin counties. The HU contains a single HSA which is occupied, and approximately 455 miles of stream channels (at 1:100,000 hydrography). Fish distribution and habitat use data compiled by NMFS biologists identify approximately 276 miles of occupied riverine/estuarine habitat in this HSA (Table G1). The CHART concluded that these occupied areas contained one or more PCEs (i.e. spawning, rearing, or migratory habitat) for this ESU and identified management activities that may affect the PCEs. Table G2 summarizes the total miles of occupied riverine and/or estuarine habitat for each HSA watershed that contains spawning/rearing, rearing/migration, or migration PCEs, as well as management activities that may affect the PCEs in each HSA. Map G22 depicts the specific areas in this HU that are occupied by the ESU and were considered for critical habitat designation. The CHART did not identify any unoccupied habitat areas in this subbasin that may be essential for the conservation of the ESU.

Unit 26. Suisun Bay (HU# 2207), San Pablo Bay (HU#2206) and San Francisco Bay (HU#s 2203 and 2204)

Portions of four HUs (2207, 2206, 2203, 2204) comprise the Suisun Bay- San Pablo-San Francisco Bay complex that is utilized by this ESU. These four HUs contain a large number of HSAs which include Bay habitat as well as freshwater tributaries to the Bay complex, but only the four HSAs that comprise the Bay complex are occupied by this ESU (HSAs 220710, 220610, 220410, and 220312). These 4 HSAs encompass approximately 427 mi^2 of estuarine habitat that serves as a rearing and migratory corridor that provides connectivity between upstream freshwater spawning, rearing, and migratory habitats for this ESU and the ocean. The CHART concluded that these four HSAs were occupied and contained PCEs for migratory habitat that support this ESU, and identified management activities that may affect the PCEs. Table G2 summarizes the management activities that may affect the PCEs in each HSA. Figure G3 depicts the specific areas (i.e. HSAs) in these HUs that are occupied by the ESU and were considered for critical

habitat designation. The CHART did not identify any unoccupied habitat areas in this subbasin that may be essential for the conservation of this ESU.

Final CHART Conservation Value Rating

Freshwater and Estuarine Areas

After reviewing the best available scientific data regarding critical habitat for this ESU, the CHART concluded that most of the occupied HSAs were of high or medium conservation value to the ESU. Of the 67 occupied HSAs that were evaluated, 37 were rated as having high conservation value, 18 were rated as having medium conservation value, and 12 were rated as having low conservation value. Table G3 summaries the CHARTs PCE/watershed scores and final conservation value ratings (i.e. low, medium or high) for all occupied HSAs in this ESU. Map 23 shows the overall spatial distribution of conservation value ratings by occupied HSA for the ESU.

Marine Areas

NMFS determined that marine areas did not warrant consideration as critical habitat for this ESU.

References and Sources of Information

NMFS 2003a. Updated Status of Federally Listed ESUs of West Coast Salmon and Steelhead. West Coast Salmon Biological Review Team Report - NWFSC and SWFSC. July 2003.

NMFS 2003b. Hatchery and Broodstock Summaries and Assessment for Chum, Coho and Chinook Salmon and Steelhead Stocks within ESUs listed under the ESA. Salmon and Steelhead Hatchery Assessment Group - NWFSC and SWFSC. May 2003.

NMFS 2004b. Draft Findings of NMFS' Critical Habitat Development and Review Teams (CHARTs) for 7 ESUs of Salmon and O. mykiss ESUs in California. Main Report and 7 Appendices. Prepared by NMFS Southwest Region.

Federal Register Notices

63 FR 13347 - Final Listing Determination for Central Valley Steelhead ESU.

69 FR 33102 - Proposed Listing Determinations for 27 West Coast Salmon and Steelhead ESUs.

69 FR 71880 - Proposed Critical Habitat Designations for 7 Salmon and Steelhead ESUs in California

70 FR 37219 - 6-Month Extension of the Final Listing Determinations for 10 ESUs of West Coast Oncorhynchus mykiss.

Table G1. Central Valley Steelhead ESU: Occupancy, habitat use, and geographic area information by Hydrologic Unit and Hydrologic Subarea.

HSA falls within and outside of ESU
HSA falls entirely outside of ESU

Note: Occupied Miles totals can be misleading for units several valley floor units as mainstem Rivers straddle the unit boundaries

HU NUMBER	HU NAME	Major Stream / Watershed in HU	HU Occupied (Y or N)	Acres in HU	Square Miles in HU	Stream Miles (1:100k) in HU	Occupied Stream Miles	Occupied Stream Miles (Spawning)	Occupied Stream Miles (Rearing)	Occupied Stream Miles (Migration)	County HU Falls within	Acres of County in HU	Square Miles of County in HU	Percent of HU by County	HSA NUMBER	HSA NAME	HSA Occupied (Y or N)	Acres in HSA (contained within the HU)	Acres in HSA (limited to those acres that fall within the ESU only)	Square Miles in HSA (contained within the HU)	Square Miles in HSA (limited to those acres that fall within the ESU only)	Stream Miles (1:100K) contained within the HU	Stream Miles in HSA (limited to those acres that fall within the ESU only)
5504	Tehama	Valley sections of Oat-Elder Stony-Reed-Pine-Red Bank	Y	716,144	1119	1879	228	69	228	213	Tehama	579,211	905	81%										
											Butte	84,931	133	12%	550410	Lower Stony Creek	Y	29,069	29,069	45	45	91	91
											Glenn	52,002	81	7%	550420	Red Bluff	Y	687,076	687,076	1,073	1,073	1788	1788
5507	Whitmore	Upper NF Battle-NF Bear-South Cow-Clover-Oak Run	Y	584,320	913	990	177	176	177	177	Shasta	454,547	710	78%										
											Tehama	129,773	203	22%	550711	Inks Creek	Y	18,831	18,831	29	29	28	28
															550712	Battle Creek	Y	230,971	230,971	361	361	341	341
															550721	Ash Creek	Y	11,417	11,417	18	18	19	19
															550722	Inwood	Y	80,479	80,479	126	126	138	138
															550731	South Cow Creek	Y	50,429	50,429	79	79	85	85
															550732	Old Cow Creek	Y	84,122	84,122	131	131	153	153
															550733	Little Cow Creek	Y	108,071	108,071	169	169	227	227
5508	Redding	Valley sections of Cottonwood-Cow-Ash	Y	451,223	705	1030	228	228	228	223	Shasta	265,068	414	59%										
											Tehama	186,155	291	41%	550810	Enterprise Flat	Y	233,670	233,670	365	365	550	550
															550820	Lower Cottonwood	Y	217,553	217,553	340	340	481	481
5509	Eastern Tehama	Upper Deer-Mill-Antelope-Big Chico	Y	573,829	896	1049	151	148	151	151	Shasta	3,319	5	1%										
											Tehama	512,944	801	89%	550914	Big Chico Creek	Y	46,159	46,159	72	72	85	85
											Plumas	109	0	0%	550915	Mud Creek	N	19,323	19,323	30	30	59	59
											Butte	57,458	90	10%	550916	Pine Creek	N	69,300	69,300	108	108	171	171
															550920	Deer Creek	Y	133,316	133,316	208	208	206	206
															550941	Big Dry Creek	N	28,888	28,888	45	45	51	51
															550942	Upper Mill Creek	Y	83,637	83,637	131	131	128	128
															550962	Dye Creek	Y	26,006	26,006	41	41	55	55
															550963	Antelope Creek	Y	92,466	92,466	144	144	158	158
															550964	Paynes Creek	Y	55,702	55,702	87	87	105	105
															550965	Salt Creek	N	19,032	19,032	30	30	32	32
5510	Sacramento Delta	Sacramento River-Yolo Bypass	Y	285,422	446	355	194	0	194	194	Yolo	92,191	144	32%										
											Sacramento	112,178	175	39%	551000	Sacramento Delta	Y	285,422	233,003	446	364	355	293
											Solano	81,053	127	28%										
5511	Valley Putah-Cache	Putah	Y	615,528	961	751	83	8	83	83	Colusa	76	0	0%										
											Yolo	361,302	564	59%	551110	Elmira	Y	246,988	126,192	386	197	313	187
											Napa	115	0	0%	551120	Lower Putah Creek	Y	249,336	17,173	389	27	229	7
											Solano	254,036	397	41%	551130	Lower Cache Creek	N	119,203	0	186	0	209	0
5514	American River	Auburn Ravine-Coon-Doty-Antelope	Y	1,050,910	1,642	2994	20	20	20	20	Alpine	12,340	19	1%										
											Amador	10,714	17	1%	551421	Green Valley	N	52,399	0	82	0		0
											El Dorado	673,214	1,052	64%	551422	Auburn	Y	53,485	0	84	0	104	0
											Placer	353,421	552	34%	551423	Folsom Reservior	N	11,029	0	17	0		0
											Sacramento	1,221	2	0%	551431	Weber Creek	N	63,660	0	99	0		0
															551432	Coloma	N	159,174	0	249	0		0
															551433	Silver Creek	N	59,986	0	94	0		0
															551434	Union Valley	N	53,694	0	84	0		0
															551435	Kyburz	N	105,950	0	165	0		0
															551436	Silver Fork	N	71,281	0	111	0		0
															551441	Volcanoville	N	65,261	0	102	0		0
															551442	Duncan Canyon	N	127,008	0	198	0		0
															551443	Rubicon	N	92,251	0	144	0		0
															551444	Loon Lake	N	36,489	0	57	0		0
															551445	Hell Hole	N	73,307	0	115	0		0
															551451	Clementine	N	25,936	0	41	0		0
5515	Marysville	Feather-Yube-Bear	Y	266,718	417	562	75	58	75	75	Butte	104,775	164	39%										
											Yuba	117,208	183	44%	551510	Lower Bear River	Y	76,927	76,927	120	120	185	185
											Sutter	23,806	36	9%	551530	Lower Yuba River	Y	28,145	28,145	44	44	41	41
											Placer	21,729	34	8%	551540	Lower Feather River	Y	161,646	161,646	252	252	336	336
5517	Yuba River	Yuba-Dry	Y	919,595	1436	2048	22	22	22	22	Butte	47,088	74	5%										
											Nevada	338,354	529	37%	551712	Browns Valley	Y	32,753	32,753	51	51	82	82
											Placer	12,558	20	1%	551713	Mildred Lake	Y	46,056	0	72	0	94	0
											Plumas	12,005	19	1%	551714	Englebright	Y	35,512	0	55	0	86	0
											Sierra	309,482	483	34%	551720	Nevada City	Y	54,499	38,206	85	60	122	87
											Yuba	200,108	313	22%	551731	Shady Creek	N	30,179	0	47	0	71	0
															551732	North Bloomfield	N	69,907	0	109	0	165	0
															551733	Canyon Creek	N	32,997	0	52	0	53	0
															551734	Lake Spaulding	N	96,106	0	150	0	178	0
															551741	North San Juan	N	54,176	0	85	0	129	0
															551742	Camptonville	N	57,012	0	89	0	113	0
															551743	Middle Yuba	N	23,802	0	37	0	41	0
															551751	Bullards Bar	N	49,017	0	77	0	118	0
															551752	North Yuba	N	39,349	0	61	0	95	0
															551753	Goodyears Bar	N	131,999	0	206	0	311	0
															551754	Sierra City	N	90,498	0	141	0	172	0
															551760	South Honcut Creek	N	75,736	0	118	0	219	0
5519	Valley-American	American-Lower Coon-Auburn	Y	613,101	958	1188	187	55	187	187	El Dorado	1,569	2	0%										
											Placer	174,403	272	28%	551911	Franklin	N	62,182	62,182	97	97	99	99
											Sacramento	290,552	454	47%	551912		N	65,397	65,397	102	102	84	84
											Sutter	69,045	108	11%	551921	Lower American	Y	195,188	165,753	305	259	418	355
											Yolo	1,397	2	0%	551922	Pleasant Grove	Y	290,333	290,333	454	454	588	588
											Yuba	76,136	119	12%										

5520	Colusa Basin	Sutter Bypass- Colusa Drain-	Y	1,771,171	2767	2815	285	56	285	285	Butte	301,676	471	17%										
											Colusa	562,586	879	32%	552010	Sycamore-Sutter	Y	246,952	246,952	386	386	155	155
											Glenn	434,829	679	25%	552021	Colusa Trough	N	891,690	53,349	1,393	83	1648	62
											Sutter	297,222	464	17%	552022	Orland	N	36,543	0	57	0	12	0
											Yolo	174,865	273	10%	552030	Sutter Bypass	Y	183,595	183,595	287	287	168	168
															552040	Butte Basin	Y	412,391	4,493	644	7	833	11
5521	Butte Creek	Butte- Little Chico	Y	132,405	207	310	38	38	38	38	Tehama	5,767	9	4%										
											Plumas	688	1	1%	552110	Upper Dry Creek	Y	15,877	15,877	25	25	50	50
											Butte	125,949	197	95%	552120	Upper Butte Creek	Y	17,761	17,761	28	28	49	49
															552130	Upper Little Chico	Y	98,767	98,767	154	154	211	211
5523	Ball Mountain	Upper Thomes-Elder	Y	213,899	334	521	41	41	41	41	Trinity	94	0	0%										
											Tehama	213,712	334	100%	552310	Thomes Creek	Y	123,466	123,466	193	193	301	301
											Mendocino	92	0	0%	552321	Elder Creek	N	60,503	60,503	95	95	149	149
															552322	Red Bank Creek	N	29,930	29,930	47	47	71	71
5524	Shasta Bally	SF-MF-NF- Cottonwood- Clear Creek	Y	579,290	905	1003	119	119	119	119	Trinity	825	1	0%										
											Shasta	360,702	563	62%	552433	South Fork	Y	110,519	110,519	173	173	192	192
											Tehama	217,763	340	38%	552434	Wells Creek	N	61,780	61,780	96	96	120	120
															552435	Oino	Y	72,938	72,938	114	114	116	116
															552436	Platina	Y	140,502	140,502	219	219	264	264
															552440	Spring Creek	Y	34,898	10,257	55	16	67	17
															552461	Whiskeytown Lake	N	6,880	6,880	11	11	9	9
															552462	Kanaka Peak	Y	18,113	18,113	28	28	37	37
															552463	Middle Clear	N	47,350	47,350	74	74	77	77
															552464	French Gulch	N	86,311	6,859	135	11	122	10
5531	North Valley Floor	Cosumnes- Calaveras- Mokelumne	Y	882,000	1,378	2195	189	87	172	190	Sacramento	201,592	315	23%										
											Amador	64,511	101	7%	553111	Herald	Y	258,174	258,174	403	403	778	778
											Calaveras	141,604	221	16%	553112	Lower Deer Creek	N	19,266	14,266	30	22	46	45
											San Joaquin	404,155	631	46%	553120	Lower Mokelumne	Y	215,303	186,855	336	292	392	305
											Stanislaus	70,139	110	8%	553130	Lower Calaveras	Y	149,365	149,365	233	233	374	
															553140	Duck-Littlejohns	N	239,893	239,893	375	375	604	604
5532	Middle Sierra	Sutter- Jackson-Dry Creek	Y	911,452	1,424	2545	70	70	70	70	El Dorado	333,916	522	37%										
											Sacramento	16,271	25	2%	553221	Big Canyon Creek	Y	93,876	0	147	0		0
											Amador	312,293	488	34%	553222	Upper Deer Creek	N	46,751	415	73	1		1
											Alpine	82,932	130	9%	553223	North Fork Cosumnes	Y	135,647	0	212	0		0
											Calaveras	166,041	259	18%	553224	Omo Ranch	Y	128,498	0	201	0		0
															553240	Sutter Creek	Y	135,632	135,632	212	212	403	403
															553260	Upper Mokelumne	N	371,048	0	580	0	902	0
5533	Upper Calaveras	Upper Calaveras	Y	232,023	362	743	6	6	6	6	Calaveras	232,023	362	100%										
															553310	New Hogan Reservoir	Y	39,209	5,058	61	8	130	17
															553320	North Fork Calaveras	N	78,427	78,427	123	123	235	0
															553330	South Fork Calaveras	N	114,388	114,388	179	179	378	0
5534	Stanislaus River	Upper Stanislaus	Y	638,887	998	1708	3	3	3	3	Alpine	84,640	132	13%										
											Calaveras	123,531	193	19%	553410	Table Mountain	Y	5,321	5,321	8	8	18	18
											Mono	75	0	0%	553421	New Melones Reservoir	N	1,927	0	3	0	17	0
											Stanislaus	32	0	0%	553422	Angels Camp	N	161,446	0	252	0	432	0
											Tuolumne	430,610	673	67%	553430	South Fork Stanislaus	N	68,585	0	107	0	191	0
															553441	Middle Fork Stanislaus	N	181,432	0	283	0	470	0
															553442	Beardsley Lake	N	710	0	1	0	6	0
															553450	North Fork Stanislaus	N	175,820	0	275	0	461	0
			Y												553460	Clark Fork	N	43,748	0	68	0	115	0
5535	San Joaquin Valley Floor	Lower Stanislaus- Tuolumne- Merced		1,236,613	1,932	1313	159	54	150	159	Calaveras	19	0	0%										
											Madera	191	0	0%	553510	Manteca	Y	95,014	95,014	148	148	5	5
											Mariposa	12,897	20	1%	553520	Valley Home	N	28,437	28,437	44	44	29	29
											Merced	638,143	997	52%	553530	Riverbank	Y	162,934	162,934	255	255	137	137
											San Joaquin	106,346	166	9%	553540	Waterville	N	75,483	44,568	118	70	158	84
											Stanislaus	474,742	742	38%	553550	Turlock	Y	204,096	204,096	319	319	57	57
											Tuolumne	4,275	7	0%	553560	Monpelier	Y	149,985	12,818	234	20	285	245
															553570	El Nido-Stevinson	Y	220,471	0	345	0	213	0
															553580	Merced	Y	173,550	0	271	0	180	0
															553590	Fahr Creek	Y	126,643	7,587	198	12	249	21
5536	Tuolumne River	Upper Tuolumne	N	1,051,685	1,643	2282	0	0	0	0	Mariposa	612	1	0%										
											Merced	147	0	0%	553620	Vizard Creek	N	65,390	65,390	102	102		
											Mono	605	1	0%	553622		N	7,413	7,413	12	12		
											Stanislaus	27,360	43	3%	553631	Sonora	N	168,884	0	264	0		
											Tuolumne	1,022,961	1,598	97%	553632	Don Pedro Reservoir	N	11,273	0	18	0		
															553640	Clavey River	N	229,940	0	359	0		
															553651	Mercut Peak	N	147,305	0	230	0		
															553652	Cherry Lake	N	1,767	0	3	0		
															553653	Lake Eleanor	N	1,015	0	2	0		
															553660	Hetch Hetchy	N	314,578	0	491	0		
															553670	Middle Tuolumne	N	46,387	0	72	0		
															553680	South Fork Tuolumne	N	57,732	0	90	0		
5537	Merced River	Upper Merced	N	706,626	1,104	1391	0	0	0	0	Madera	101,714	159	14%										
											Mariposa	591,672	924	84%	553710	Kassenbaum Flats	N	42,100	25,818	66	40		30
											Merced	10,835	17	2%	553721	Coulterville	N	74,845	0	117	0		0
											Mono	39	0	0%	553722	Lake McClure	N	5,590	0	9	0		0
											Stanislaus	1,432	2	0%	553730	North Fork Merced	N	161,007	0	251	0		0
											Tuolumne	933	1	0%	553740	South Fork Merced	N	154,236	0	241	0		0
															553750	Yosemite	N	122,029	0	191	0		0
															553760	Mount Starr King	N	146,819	0	229	0		0
5541	Delta-Mendota Canal	Delta-Mendota Canal	Y	781,231	1,220	2596	50	0	48	50	Fresno	242,206	378	31%										
											Madera	1,071	2	0%	554110	Patterson	Y	185,971	185,971	290	290	172	172
											Merced	349,782	546	45%	554120	Los Banos	Y	595,260	0	930	0	485	0
											San Joaquin	28,427	44	4%										
											Stanislaus	159,745	250	20%										
5542	Middle West Side	Orestimba- Del Puerto-	N	325,884	509	782	0	0	0	0	Alameda	7	0	0%										
											Merced	72,006	112	22%	554210	Del Puerto Creek	N	133,954	133,954	209	209	329	329
											San Joaquin	17,653	28	5%	554220	Orestimba Creek	N	109,237	76,656	171	120	293	208
											Santa Clara	269	0	0%	554231	Romero Creek	N	69,792	0	109	0	130	0
											Stanislaus	235,949	369	72%	554232	San Luis Reservoir	N	12,900	0	20	0	30	0

		Garzas																				
5543	North Diablo Range	Upper Mountain House Corral Hollow	Y	201.825	315	336	4	0	4	4	Alameda	43.692	68	22%	554300	North Diablo Range	Y	201.825	201.825	315	315	336	336
											Contra Costa	96.766	151	48%									
											Sacramento	1.460	2	1%									
											San Joaquin	59.908	94	30%									
5544	San Joaquin Delta	Lower San Joaquin	Y	402.211	628	455	276	0	272	276	Alameda	3.428	5	1%	554400	San Joaquin Delta	Y	402.211	402.211	628	628	455	455
											Contra Costa	92.390	144	23%									
											Sacramento	11.399	18	3%									
											San Joaquin	294.902	461	73%									
											Stanislaus	93	0	0%									

Table G2. Summary of Occupied Subbasins/Watersheds. PCE's and Management Activities Affecting PCE's for the Central Valley Steelhead ESU

Map Code	Basin	HSA NAME	HSA NUMBER	Spawning/Rearing PCEs (mi)	Rearing/Migration PCEs (mi)	Presence/Migration Only PCEs (mi)	Management Activities*
	San Francisco Bay	Bay Waters	220312				AW, MW, PP, IS, DK, BS, ID
	San Francisco Bay	Bay Channel	220410				AW, MW, PP, IS, DK, BS, ID
	San Francisco Bay	San Pablo Bay	220610				AW, MW, PP, IS, DK, BS, ID
	Suisun Bay	Suisun Bay	220710				AW, MW, PP, IS, HR, DK, BS, WE, ID
	Tehama	Lower Stony Creek	550410	25	25	25	AW, FP, DO
	Tehama	Red Bluff	550420	203	203	203	AW, MW, PP, DK, BS, UD, RM
	Whitmore	Inks Creek	550711	2	2	2	RM
	Whitmore	Battle Creek	550712	82	82	82	AW, FP, WD
	Whitmore	Ash Creek	550721	9	9	9	RM
	Whitmore	Inwood	550722	33	33	33	AW, MW, UD
	Whitmore	South Cow Creek	550731	18	18	18	AW, FM, RM
	Whitmore	Old Cow Creek	550732	19	19	19	AW, RM, FM
	Whitmore	Little Cow Creek	550733	16	16	16	AW, RM, FM
	Redding	Enterprise Flat	550810	153	153	147	WS, DO, FP, PP, GM
	Redding	Lower Cottonwood	550820	75	75	75	AW, FP, RM
	Eastern Tehama	Big Chico Creek	550914	9	9	9	FP, FM, RM, RD
	Eastern Tehama	Mud Creek	550915				
	Eastern Tehama	Pine Creek	550916				
	Eastern Tehama	Deer Creek	550920	35	35	35	FM, RM
	Eastern Tehama	Big Dry Creek	550941				
	Eastern Tehama	Upper Mill Creek	550942	48	48	48	FM, RM
	Eastern Tehama	Dye Creek	550962	7	7	7	RM
	Eastern Tehama	Antelope Creek	550963	34	34	34	FM, AW, MW, RM
	Eastern Tehama	Paynes Creek	550964	17	17	17	RM, AW, FM
	Eastern Tehama	Salt Creek	550965				
	Sacramento Delta	Sacramento Delta	551000	194	194	194	AW, PP, IS, DK, BS
	Valley Putah-Cache	Elmira	551110	68	68	68	UD, AW, FP
	Valley Putah-Cache	Lower Putah Creek	551120	16	16	16	UD, AW, FP
	American River	Green Valley	551421				
	American River	Auburn	551422	20	20	20	UD, IW,
	American River	Folsom Reservior	551423				
	American River	Weber Creek	551431				
	American River	Coloma	551432				
	American River	Silver Creek	551433				
	American River	Union Valley	551434				
	American River	Kyburz	551435				
	American River	Silver Fork	551436				
	American River	Volcanoville	551441				
	American River	Duncan Canyon	551442				
	American River	Rubicon	551443				
	American River	Loon Lake	551444				
	American River	Hell Hole	551445				
	American River	Clementine	551451				
	Marysville	Lower Bear River	551510	17	17	17	AW, BS, UD
	Marysville	Lower Yuba River	551530	19	19	19	PP, AW, MW, DK, BS, FP
	Marysville	Lower Feather River	551540	40	40	40	HD, WS, PP, HM, DO
	Yuba River	Browns Valley	551712	17	17	17	AW, MW
	Yuba River	Mildred Lake	551713	0.4	0.4	0.4	AW
	Yuba River	Englebright	551714	1	1	1	AW, FP, DO
	Yuba River	Nevada City	551720	4	4	4	AW
	Yuba River	South Honcut Creek	551760				

	Valley-American	Franklin	551911				
	Valley-American	Lower American	551921	71	71	71	AW, MW, WS, UD, DO, PP, HM
	Valley-American	Pleasant Grove	551922	111	111	111	AW, FP, DK, BS, PP
	Colusa Basin	Sycamore-Sutter	552010	83	83	83	AW, HR, PP, DK, BS
	Colusa Basin	Colusa Trough	552021				AW, WH, AP, SF
	Colusa Basin	Orland	552022				
	Colusa Basin	Sutter Bypass	552030	70	70	70	AW, IS, SF, FP, WH
	Colusa Basin	Butte Basin	552040	131	131	131	AW, PP, FP, SF, DK, BS
	Butte Creek	Upper Dry Creek	552110	5	5	5	UD, RM, AW
	Butte Creek	Upper Butte Creek	552120	11	11	11	UD, RM, AW
	Butte Creek	Upper Little Chico	552130	22	22	22	WD
	Bull Mountain	Thomes Creek	552310	41	41	41	FM, AW, MW, RM
	Bull Mountain	Elder Creek	552321				
	Bull Mountain	Red Bank Creek	552322				
	Shasta Bally	South Fork	552433	43	43	43	FM, RM, RD
	Shasta Bally	Wells Creek	552434				
	Shasta Bally	Ono	552435	15	15	15	FM, RM, RD, WS
	Shasta Bally	Platina	552436	45	45	45	FM, RM, RD, WS
	Shasta Bally	Spring Creek	552440	9	9	9	WD, WS, PP, HM, DO
	Shasta Bally	Whiskeytown Lake	552461				
	Shasta Bally	Kanaka Peak	552462	7	7	7	HR, GM, WD, WS, DO
	Shasta Bally	Middle Clear	552463				
	Shasta Bally	French Gulch	552464				
	North Valley Floor	Herald	553111	78	78	78	AW, RM
	North Valley Floor	Lower Deer Creek	553112				
	North Valley Floor	Lower Mokelumne	553120	36	52	52	AW, DO, HM
	North Valley Floor	Lower Calaveras	553130	57	59	59	AW, MW, FP, CH, DK, BS
	North Valley Floor	Duck-Littlejohns	553140				
	Middle Sierra	Big Canyon Creek	553221	19	19	19	AW, FM
	Middle Sierra	Upper Deer Creek	553222				
	Middle Sierra	North Fork Cosumnes	553223	17	17	17	AW, FM
	Middle Sierra	Omo Ranch	553224	25	25	25	AW, FM
	Middle Sierra	Sutter Creek	553240	10	10	10	UD, HG, RM
	Middle Sierra	Upper Mokelumne	553260				
	Upper Calaveras	New Hogan Reservoir	553310	6	6	6	AW, MW, WS, GM
	Upper Calaveras	North Fork Calaveras	553320				
	Upper Calaveras	South Fork Calaveras	553330				
	Stanislaus River	Table Mountain	553410	3	3	3	FP, AW, WS, DO
	Stanislaus River	New Melones Reservoi	553421				
	Stanislaus River	Angels Camp	553422				
	Stanislaus River	South Fork Stanislaus	553430				
	Stanislaus River	Middle Fork Stanislaus	553441				
	Stanislaus River	Beardsley Lake	553442				
	Stanislaus River	North Fork Stanislaus	553450				
	Stanislaus River	Clark Fork	553460				
	San Joaquin Valley Floor	Manteca	553510	1	1	1	AW, FP, DK, BS
	San Joaquin Valley Floor	Valley Home	553520				
	San Joaquin Valley Floor	Riverbank	553530	54	54	54	AW, FP, DK, BS
	San Joaquin Valley Floor	Warnersville	553540				
	San Joaquin Valley Floor	Turlock	553550	39	39	39	AW, DK, BS, FP
	San Joaquin Valley Floor	Montpelier	553560	14	14	14	AW, FP
	San Joaquin Valley Floor	El Nido-Stevinson	553570	2	11	11	AW, MW, UD
	San Joaquin Valley Floor	Merced	553580	33	33	33	AW, MW, UD
	San Joaquin Valley Floor	Fahr Creek	553590	7	7	7	AW
	Tuolumne River	Vizard Creek	553620				

	Tuolumne River	Sonora	553631				
	Tuolumne River	Don Pedro Reservoir	553632				
	Tuolumne River	Clavey River	553640				
	Tuolumne River	Mercut Peak	553651				
	Tuolumne River	Cherry Lake	553652				
	Tuolumne River	Lake Eleanor	553653				
	Tuolumne River	Hetch Hetchy	553660				
	Tuolumne River	Middle Tuolumne	553670				
	Tuolumne River	South Fork Tuolumne	553680				
	Merced River	Kassenbaum Flats	553710				
	Merced River	Coulterville	553721				
	Merced River	Lake McClure	553722				
	Merced River	North Fork Merced	553730				
	Merced River	South Fork Merced	553740				
	Merced River	Yosemite	553750				
	Merced River	Mount Starr King	553760				
	Delta-Mendota Canal	Patterson	554110	48	48	48	AW, MW, IS, PP, DG
	Delta-Mendota Canal	Los Banos	554120	0	1	1	AW, MW, UD
	Middle West Side	Del Puerto Creek	554210				
	Middle West Side	Orestimba Creek	554220				
	Middle West Side	Romero Creek	554231				
	Middle West Side	San Luis Reservoir	554232				
	North Diablo Range	North Diablo Range	554300	4	4	4	AW, MW, IS, PP
	San Joaquin Delta	San Joaquin Delta	554400	272	276	276	AW, MW, IS, PP, EF

*Management Activities Codes:

AP, Adult passage
AW - Agricultural water withdrawls
BS - Streamband stabilization for flood control
CH - channelization
DG - Dredging
DK - Diking
DO - Dam operations
EF - Entrainment and flow alterations
FM - Forest management
FP - Fish passage
GM - Gravel mining
HG - Historic gold mining
HM - Hatchery management
HR - Habitat restoration
ID - Industrial development
IS - Invasive/non-native species
MW - Municipal water withdrawls
PP - Point and non-point water pollution
RD - Roads
RM- Rangeland management
SF - Seasonal flooding for flood control
UD - Urban development
WD - Water diversion for hydroelectric
WE - Wetland/Estuary management
WH - Wildlife habitat management
WS - Water storage for flood control

Table G3. Summary of Preliminary Scores and Overall Rankings of Conservation Values for Critical Habitat for HSA watersheds occupied by the Central Valley Steelhead ESU

Map Code	Basin	Watershed	Calwater Unit	Total Score (0-18)	Comments / Other Considerations	Conservation Value
	San Francisco Bay	Bay Waters	220312	10		High
	San Francisco Bay	Bay Channel	220410	5		Low
	San Francisco Bay	San Pablo Bay	220610	10		High
	Suisun Bay	Suisun Bay	220710	10		High
	Tehama	Lower Stony Creek	550410	8		Medium
	Tehama	Red Bluff	550420	15		High
	Whitmore	Inks Creek	550711	5		Low
	Whitmore	Battle Creek	550712	17		High
	Whitmore	Ash Creek	550721	5		Low
	Whitmore	Inwood	550722	9		Medium
	Whitmore	South Cow Creek	550731	9		Medium
	Whitmore	Old Cow Creek	550732	11		High
	Whitmore	Little Cow Creek	550733	11		High
	Redding	Enterprise Flat	550810	14		High
	Redding	Lower Cottonwood	550820	10		High
	Eastern Tehama	Big Chico Creek	550914	12		High
	Eastern Tehama	Mud Creek	550915	0		Not Occupied
	Eastern Tehama	Pine Creek	550916	0		Not Occupied
	Eastern Tehama	Deer Creek	550920	15		High
	Eastern Tehama	Big Dry Creek	550941	0		Not Occupied
	Eastern Tehama	Upper Mill Creek	550942	15		High
	Eastern Tehama	Dye Creek	550962	5		Low
	Eastern Tehama	Antelope Creek	550963	14		High
	Eastern Tehama	Paynes Creek	550964	9		Medium
	Eastern Tehama	Salt Creek	550965	0		Not Occupied
	Sacramento Delta	Sacramento Delta	551000	13		High
	Valley Putah-Cache	Elmira	551110	9		Medium
	Valley Putah-Cache	Lower Putah Creek	551120	10	Medium ranking because of no connectivity	Medium
	American River	Green Valley	551421	0		Not Occupied
	American River	Auburn	551422	9		Medium
	American River	Folsom Reservior	551423	0		Not Occupied
	American River	Weber Creek	551431	0		Not Occupied
	American River	Coloma	551432	0		Not Occupied
	American River	Silver Creek	551433	0		Not Occupied
	American River	Union Valley	551434	0		Not Occupied
	American River	Kyburz	551435	0		Not Occupied
	American River	Silver Fork	551436	0		Not Occupied
	American River	Volcanoville	551441	0		Not Occupied
	American River	Duncan Canyon	551442	0		Not Occupied
	American River	Rubicon	551443	0		Not Occupied
	American River	Loon Lake	551444	0		Not Occupied
	American River	Hell Hole	551445	0		Not Occupied
	American River	Clementine	551451	0		Not Occupied
	Marysville	Lower Bear River	551510	10		Medium
	Marysville	Lower Yuba River	551530	16		High
	Marysville	Lower Feather River	551540	13		High
	Yuba River	Browns Valley	551712	15		High
	Yuba River	Mildred Lake	551713	6		Low

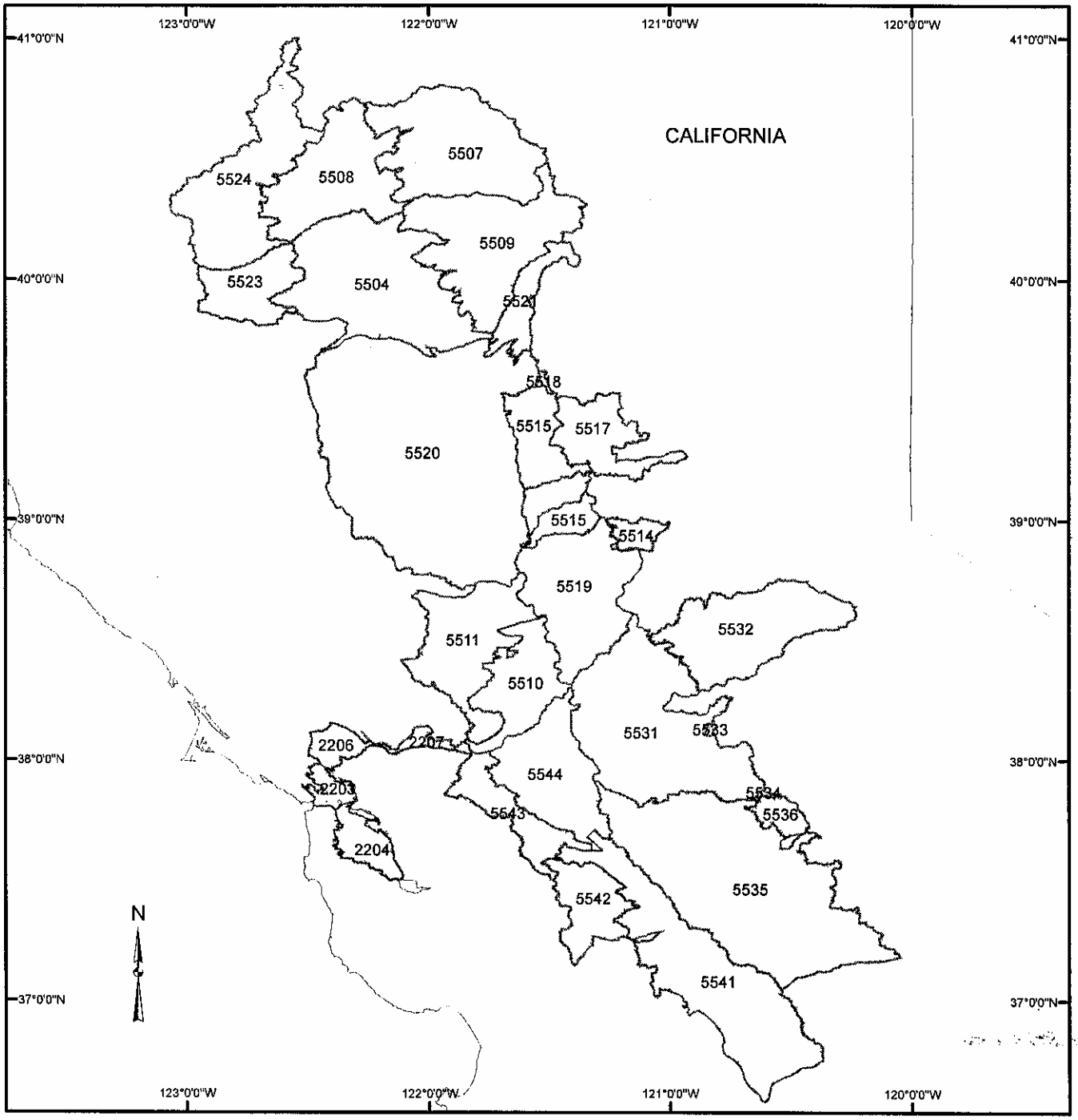
	Yuba River	Englebright	551714	10		High
	Yuba River	Nevada City	551720	6		Low
	Yuba River	South Honcut Creek	551760	0		Not Occupied
	Valley-American	Franklin	551911	0		Not Occupied
	Valley-American	Lower American	551921	13		High
	Valley-American	Pleasant Grove	551922	10		High
	Colusa Basin	Sycamore-Sutter	552010	12		High
	Colusa Basin	Colusa Trough	552021	5		High
	Colusa Basin	Orland	552022	0		Not Occupied
	Colusa Basin	Sutter Bypass	552030	10		High
	Colusa Basin	Butte Basin	552040	11		High
	Butte Creek	Upper Dry Creek	552110	8		Medium
	Butte Creek	Upper Butte Creek	552120	5		Low
	Butte Creek	Upper Little Chico	552130	11		High
	Bull Mountain	Thomes Creek	552310	14		High
	Bull Mountain	Elder Creek	552321	0		Not Occupied
	Bull Mountain	Red Bank Creek	552322	0		Not Occupied
	Shasta Bally	South Fork	552433	8		Medium
	Shasta Bally	Wells Creek	552434	0		Not Occupied
	Shasta Bally	Ono	552435	9		Medium
	Shasta Bally	Platina	552436	9		Medium
	Shasta Bally	Spring Creek	552440	12		High
	Shasta Bally	Whiskeytown Lake	552461	0		Not Occupied
	Shasta Bally	Kanaka Peak	552462	14		High
	Shasta Bally	Middle Clear	552463	0		Not Occupied
	Shasta Bally	French Gulch	552464	0		Not Occupied
	North Valley Floor	Herald	553111	7		Low
	North Valley Floor	Lower Deer Creek	553112	0		Not Occupied
	North Valley Floor	Lower Mokelumne	553120	9		Medium
	North Valley Floor	Lower Calaveras	553130	12		High
	North Valley Floor	Duck-Littlejohns	553140	0		Not Occupied
	Middle Sierra	Big Canyon Creek	553221	7		Low
	Middle Sierra	Upper Deer Creek	553222	0		Not Occupied
	Middle Sierra	North Fork Cosumnes	553223	7		Low
	Middle Sierra	Omo Ranch	553224	7		Low
	Middle Sierra	Sutter Creek	553240	6		Low
	Middle Sierra	Upper Mokelumne	553260	0		Not Occupied
	Upper Calaveras	New Hogan Reservoir	553310	12		High
	Upper Calaveras	North Fork Calaveras	553320	0		Not Occupied
	Upper Calaveras	South Fork Calaveras	553330	0		Not Occupied
	Stanislaus River	Table Mountain	553410	13		High
	Stanislaus River	New Melones Reservoir	553421	0		Not Occupied
	Stanislaus River	Angels Camp	553422	0		Not Occupied
	Stanislaus River	South Fork Stanislaus	553430	0		Not Occupied
	Stanislaus River	Middle Fork Stanislaus	553441	0		Not Occupied
	Stanislaus River	Beardsley Lake	553442	0		Not Occupied
	Stanislaus River	North Fork Stanislaus	553450	0		Not Occupied
	Stanislaus River	Clark Fork	553460	0		Not Occupied
	San Joaquin Valley Floor	Manteca	553510	12		High
	San Joaquin Valley Floor	Valley Home	553520	0		Not Occupied
	San Joaquin Valley Floor	Riverbank	553530	12		High

	San Joaquin Valley Floor	Warnersville	553540	0		Not Occupied
	San Joaquin Valley Floor	Turlock	553550	11		High
	San Joaquin Valley Floor	Montpelier	553560	13		High
	San Joaquin Valley Floor	El Nido-Stevinson	553570	7		Medium
	San Joaquin Valley Floor	Merced	553580	7		Medium
	San Joaquin Valley Floor	Fahr Creek	553590	9		Medium
	Tuolumne River	Vizard Creek	553620	0		Not Occupied
	Tuolumne River	Sonora	553631	0		Not Occupied
	Tuolumne River	Don Pedro Reservoir	553632	0		Not Occupied
	Tuolumne River	Clavey River	553640	0		Not Occupied
	Tuolumne River	Mercut Peak	553651	0		Not Occupied
	Tuolumne River	Cherry Lake	553652	0		Not Occupied
	Tuolumne River	Lake Eleanor	553653	0		Not Occupied
	Tuolumne River	Hetch Hetchy	553660	0		Not Occupied
	Tuolumne River	Middle Tuolumne	553670	0		Not Occupied
	Tuolumne River	South Fork Tuolumne	553680	0		Not Occupied
	Merced River	Kassenbaum Flats	553710	0		Not Occupied
	Merced River	Coulterville	553721	0		Not Occupied
	Merced River	Lake McClure	553722	0		Not Occupied
	Merced River	North Fork Merced	553730	0		Not Occupied
	Merced River	South Fork Merced	553740	0		Not Occupied
	Merced River	Yosemite	553750	0		Not Occupied
	Merced River	Mount Starr King	553760	0		Not Occupied
	Delta-Mendota Canal	Patterson	554110	10		High
	Delta-Mendota Canal	Los Banos	554120	5	Medium ranking because of connectivity	Medium
	Middle West Side	Del Puerto Creek	554210	0		Not Occupied
	Middle West Side	Orestimba Creek	554220	0		Not Occupied
	Middle West Side	Romero Creek	554231	0		Not Occupied
	Middle West Side	San Luis Reservoir	554232	0		Not Occupied
	North Diablo Range	North Diablo Range	554300	8		Medium
	San Joaquin Delta	San Joaquin Delta	554400	10		High

Figures G1, G2 and G3:

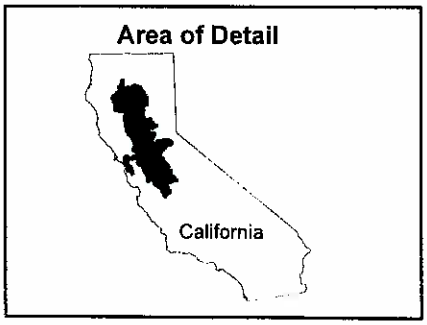
G1 - CALWATER Hydrologic Units (HU) for the Central Valley Steelhead ESU
G2 - CALWATER Hydrologic Subareas (HSAs) for the Central Valley Steelhead ESU
G3 - CALWATER HSAs comprising the San Francisco-San Pablo-Suisun Bay Complex occupied by the Central Valley Steelhead ESU

Map of the California Central Valley Steelhead ESU

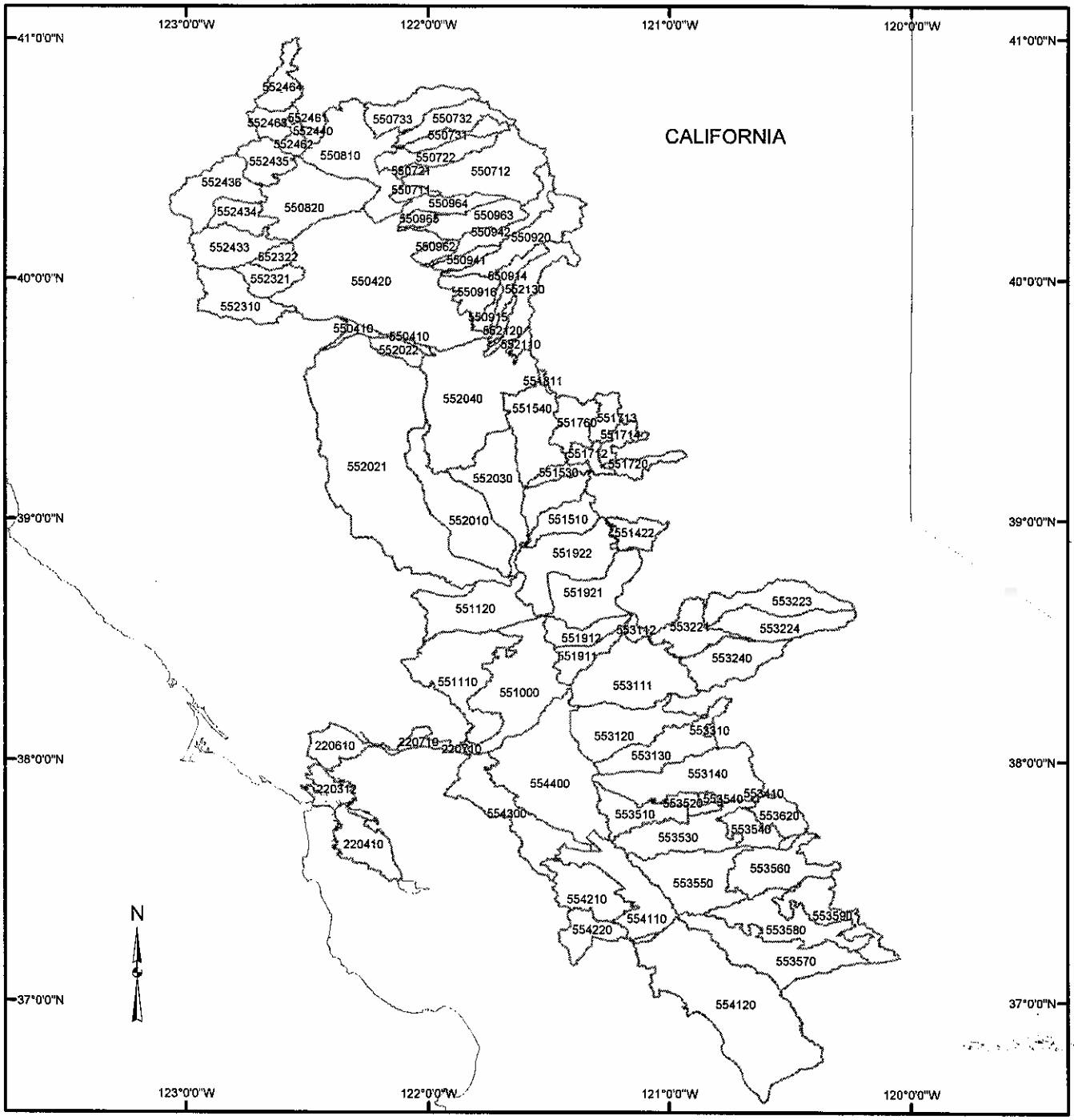


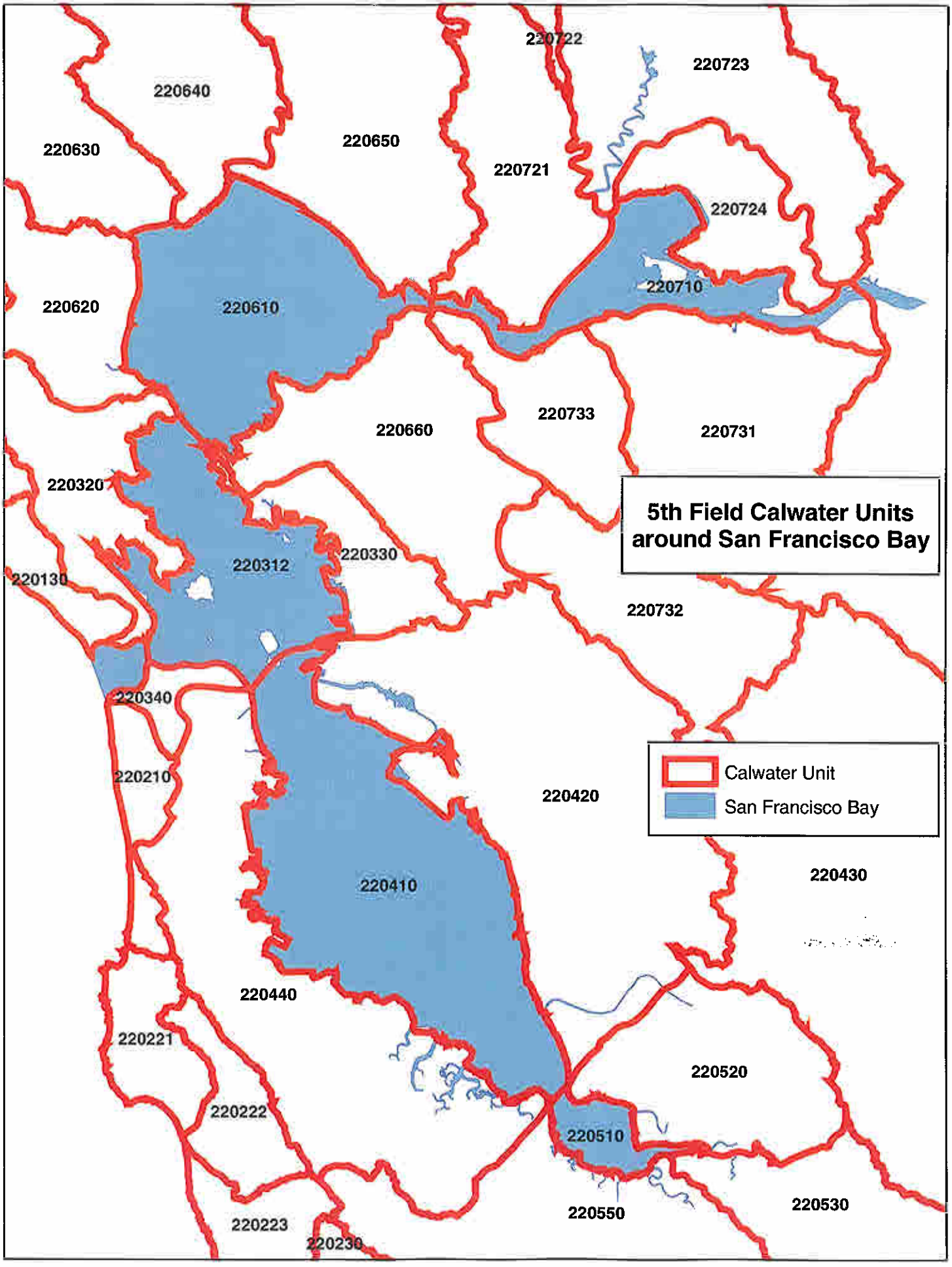
Hydrologic Unit Boundaries

State Boundary



Map of the California Central Valley Steelhead ESU

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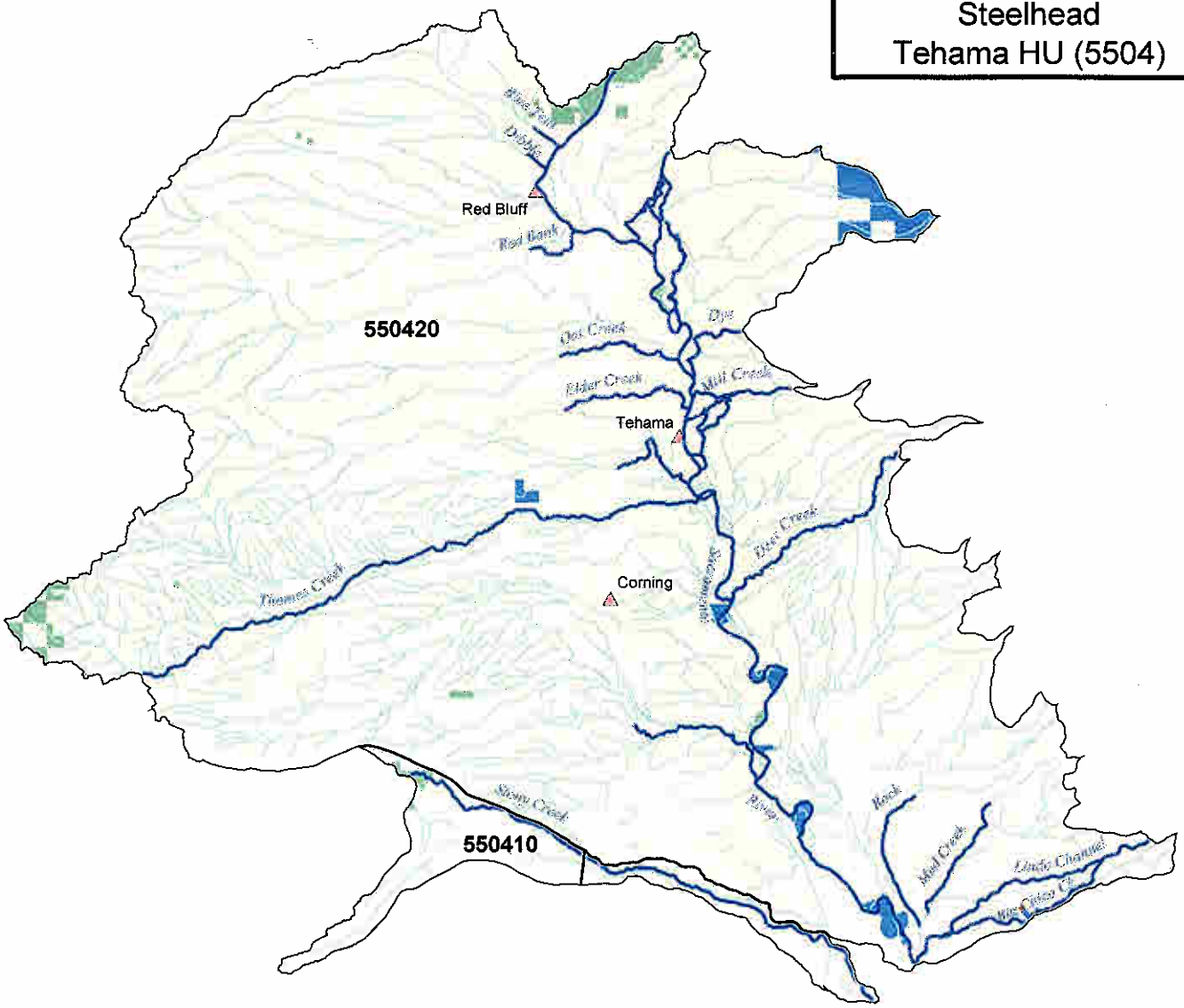
220222
220510
220550
220530
220223
220230
5th Field Calwater Units around San Francisco Bay
Calwater Unit
San Francisco Bay

Maps G1 through G22 : Central Valley Steelhead ESU - Habitat Areas (Units) Considered for Critical Habitat Designation

G1 - Unit 5504 (Tehama HU)
G2 - Unit 5507 (Whitmore HU)
G3 - Unit 5508 (Redding HU)
G4 - Unit 5509 (Eastern Tehama HU)
G5 - Unit 5510 (Sacramento Delta HU)
G6 - Unit 5511 (Valley Putah-Cache HU)
G7 - Unit 5514 (American River HU)
G8 - Unit 5515 (Marysville HU)
G9 - Unit 5517 (Yuba River HU)
G10 - Unit 5519 (Valley-American HU)
G11 - Unit 5520 (Colusa Basin HU)
G12 - Unit 5521 (Butte Creek HU)
G13 - Unit 5523 (Ball Mountain HU)
G14 - Unit 5524 (Shasta Bally HU)
G15 - Unit 5531 (North Valley Floor HU)
G16 - Unit 5532 (Middle Sierra HU)
G17 - Unit 5533 (Upper Calaveras HU)
G18 - Unit 5534 (Stanislaus River HU)
G19 - Unit 5535 (San Joaquin Valley Floor HU)
G20 - Unit 5541 (Delta-Mendota Canal HU)
G21 - Unit 5543 (North Diablo Range HU)
G22 - Unit 5544 (San Joaquin HU)

Land Ownership
California Central Valley Steelhead
Tehama HU (5504)



Cities
Steelhead Presence Streams
Hydrologic Unit Boundary

Land Ownership*

Tribal
Federal
State/Local
Private/Other
Water

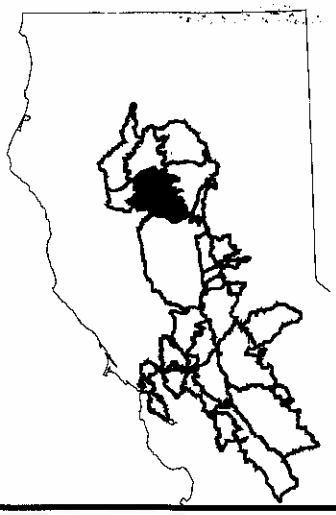
*Source: California Environmental Resources Evaluation System (CERES), 1999

Note: This map is for general reference only

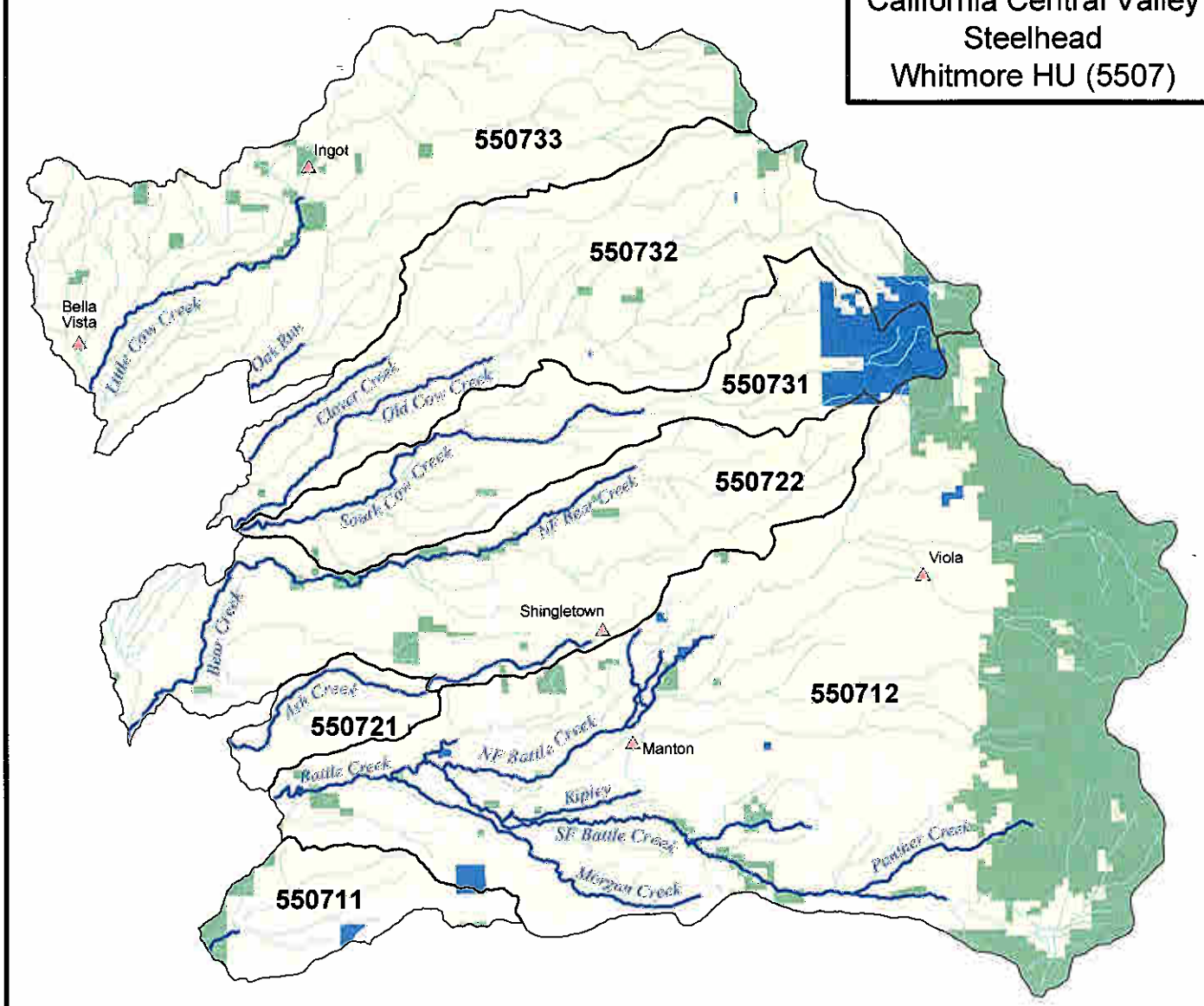
N

0 2.5 5 Miles

California Central Valley Steelhead ESU



Land Ownership
California Central Valley Steelhead
Whitmore HU (5507)



- Cities
- Steelhead Presence Streams
- Hydrologic Unit Boundary

Land Ownership*

- Tribal
- Federal
- State/Local
- Private/Other
- Water

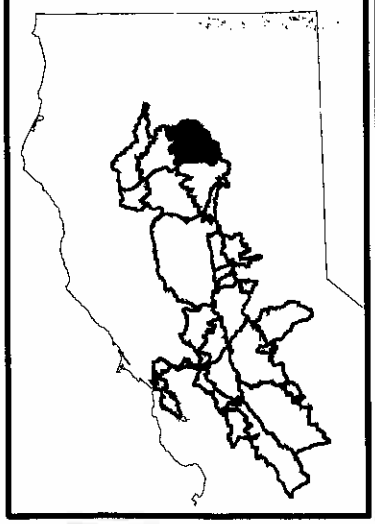
*Source: California Environmental Resources Evaluation System (CERES), 1999

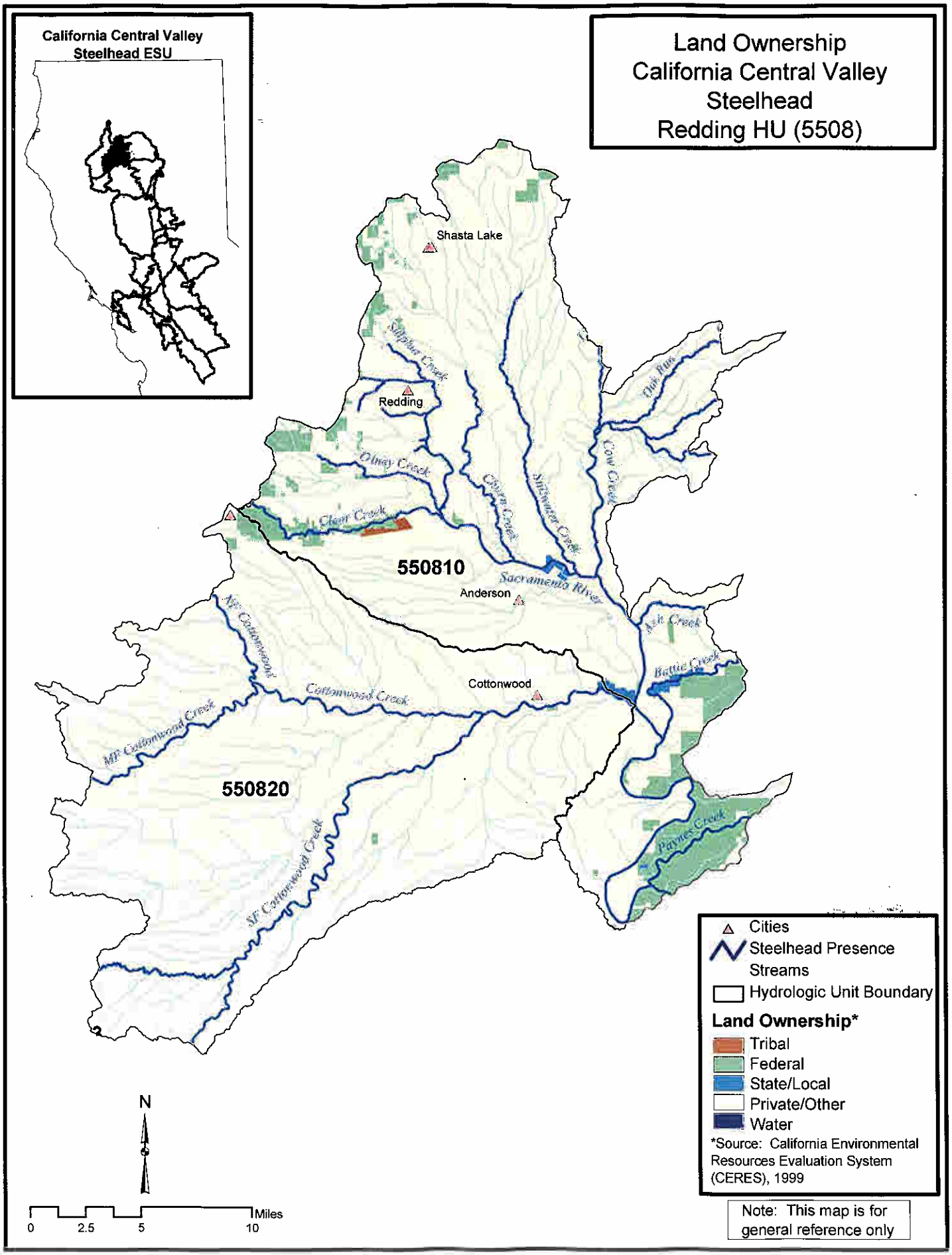
Note: This map is for general reference only

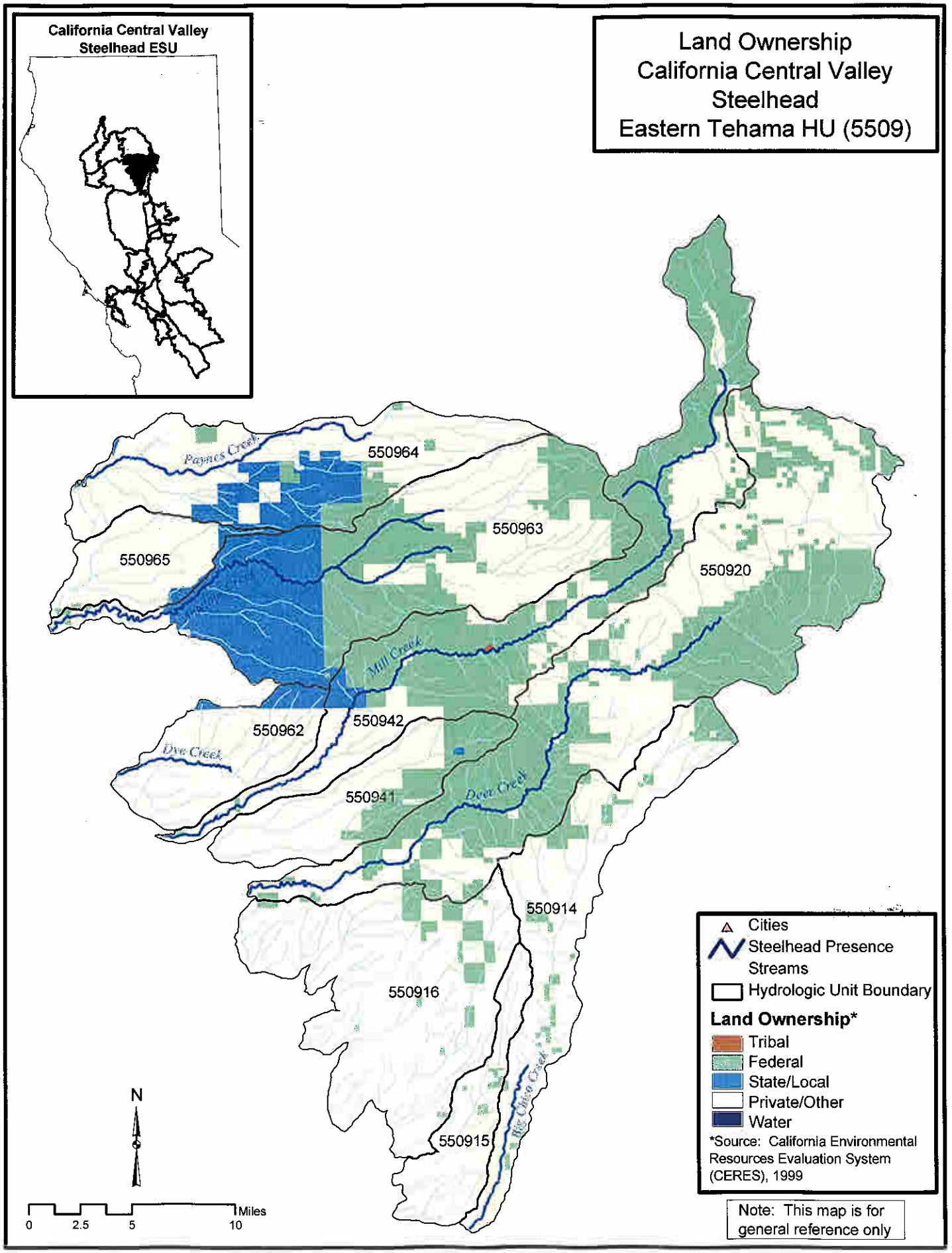
N

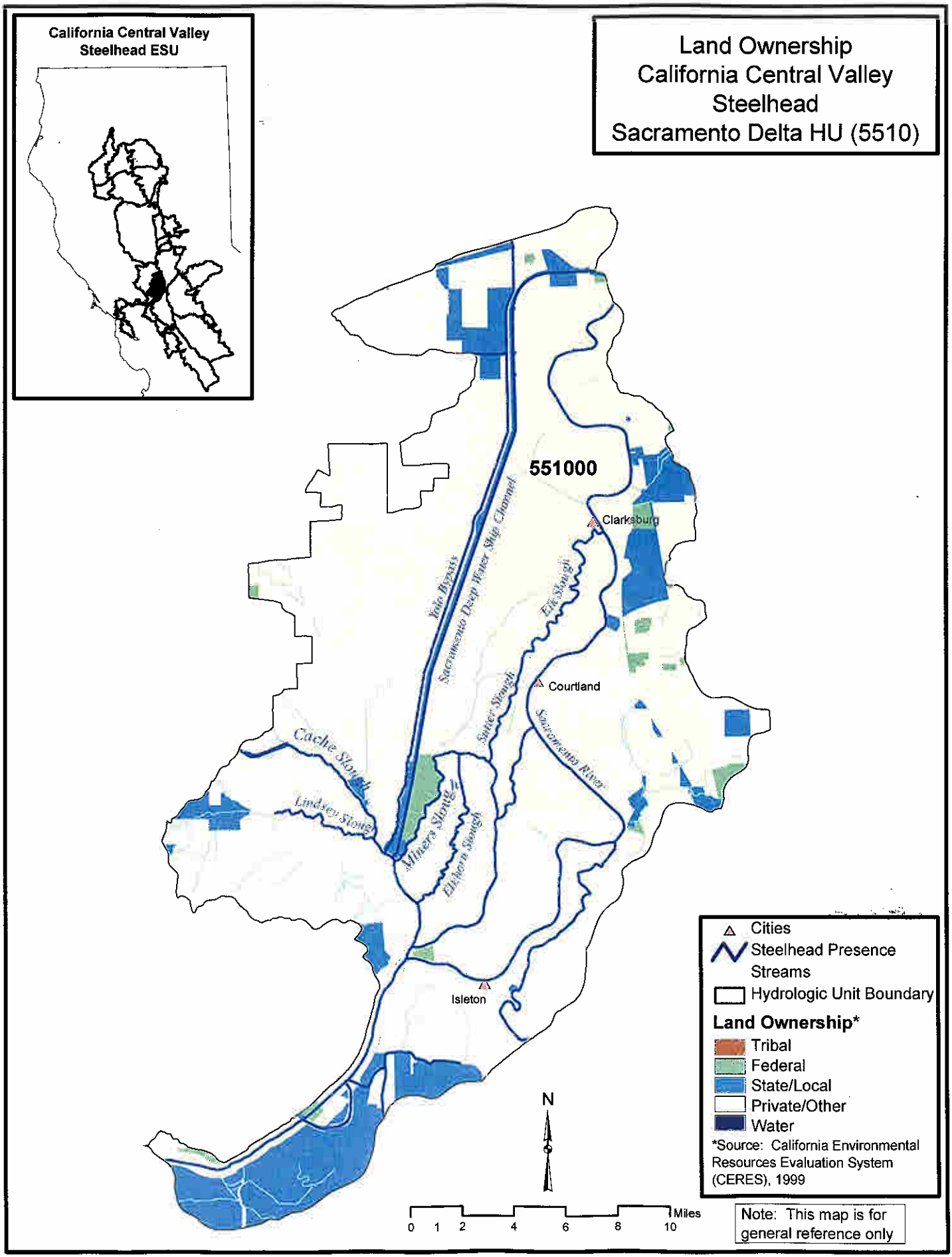
0 2.5 5 10 Miles

California Central Valley Steelhead ESU

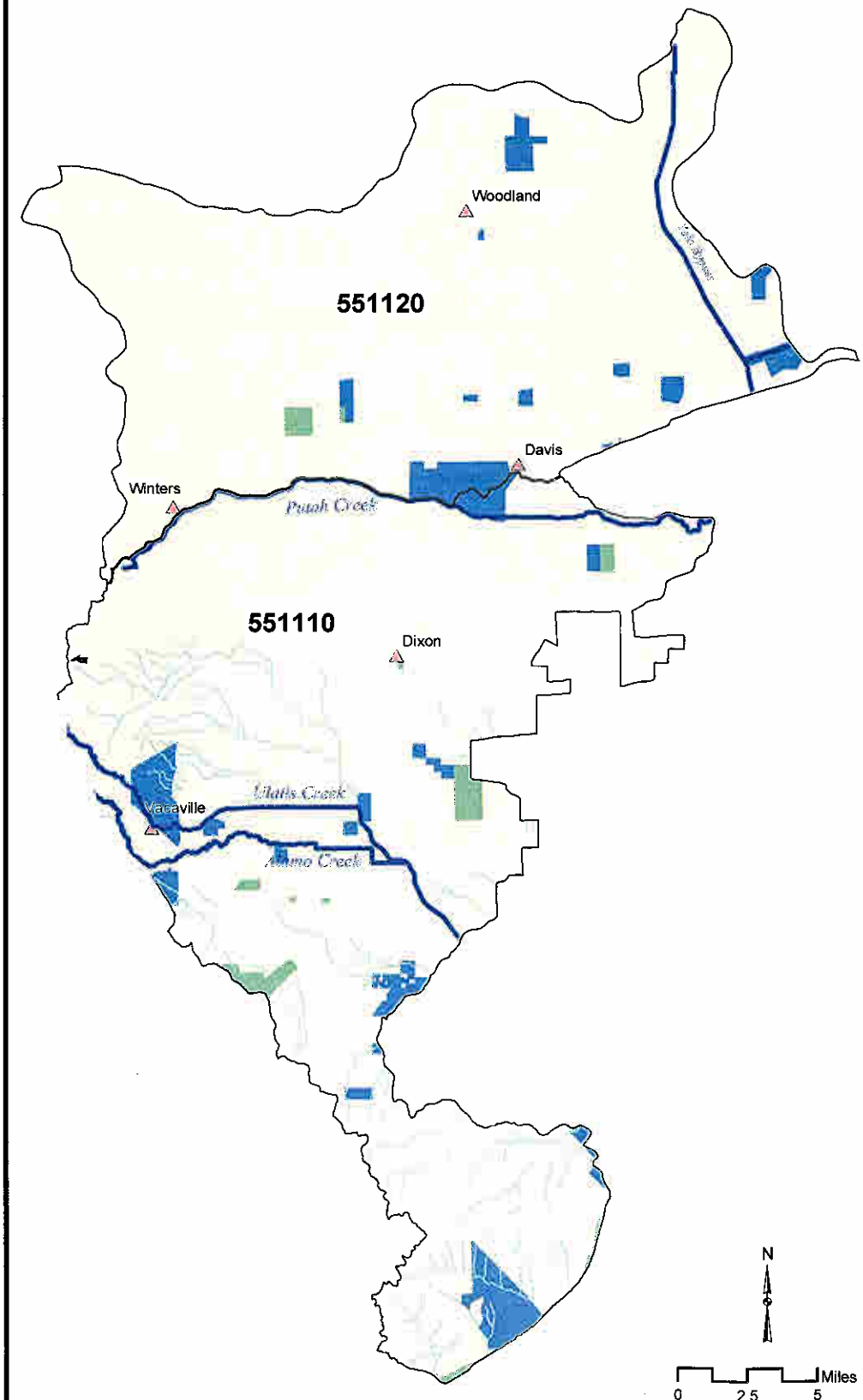


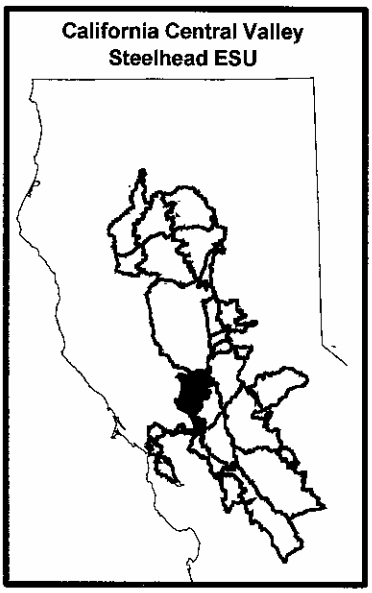

California Central Valley Steelhead ESU
Land Ownership
California Central Valley
Steelhead
Redding HU (5508)
Shasta Lake
Redding
Anderson
Cottonwood
Sacramento River
Clear Creek
Olney Creek
Churn Creek
Stillwater Creek
Cow Creek
Oak Run
Ash Creek
Battle Creek
Paynes Creek
Cottonwood Creek
NF Cottonwood
MF Cottonwood Creek
SF Cottonwood Creek
550810
550820
N
0
2.5
5
10
Miles
Cities
Steelhead Presence Streams
Hydrologic Unit Boundary
Land Ownership*
Tribal
Federal
State/Local
Private/Other
Water
*Source: California Environmental Resources Evaluation System (CERES), 1999
Note: This map is for general reference only


California Central Valley Steelhead ESU
Land Ownership
California Central Valley
Steelhead
Eastern Tehama HU (5509)
550964
550963
550965
550920
550962
550942
550941
550914
550916
550915
Paynes Creek
Mill Creek
Dye Creek
Deer Creek
Big Chico Creek
N
0
2.5
5
10
Miles
Cities
Steelhead Presence Streams
Hydrologic Unit Boundary
Land Ownership*
Tribal
Federal
State/Local
Private/Other
Water
*Source: California Environmental Resources Evaluation System (CERES), 1999
Note: This map is for general reference only


California Central Valley Steelhead ESU
Land Ownership
California Central Valley
Steelhead
Sacramento Delta HU (5510)
551000
Clarksburg
Courtland
Isleton
Yolo Bypass
Sacramento Deep Water Ship Channel
Elk Slough
Sutter Slough
Sacramento River
Cache Slough
Lindsey Slough
Miners Slough
Elkhorn Slough
N
0 1 2 4 6 8 10 Miles
Cities
Steelhead Presence
Streams
Hydrologic Unit Boundary
Land Ownership*
Tribal
Federal
State/Local
Private/Other
Water
*Source: California Environmental Resources Evaluation System (CERES), 1999
Note: This map is for general reference only

Land Ownership
California Central Valley Steelhead
Valley Putah-Cache HU (5511)





Cities
Steelhead Presence Streams
Hydrologic Unit Boundary

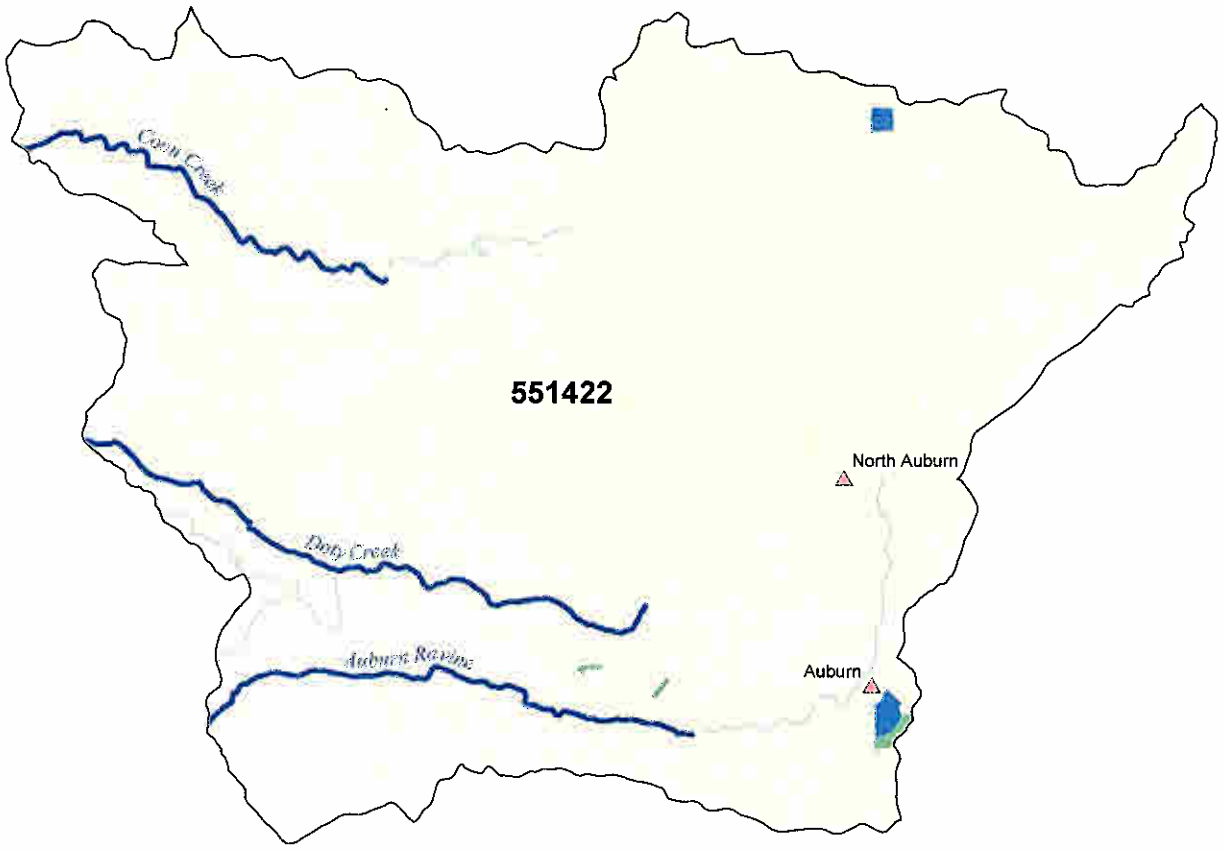
Land Ownership*

Tribal
Federal
State/Local
Private/Other
Water

*Source: California Environmental Resources Evaluation System (CERES), 1999

Note: This map is for general reference only

Land Ownership
California Central Valley
Steelhead
American River HU (5514)



Cities
Steelhead Presence Streams
Hydrologic Unit Boundary

Land Ownership*
Tribal
Federal
State/Local
Private/Other
Water

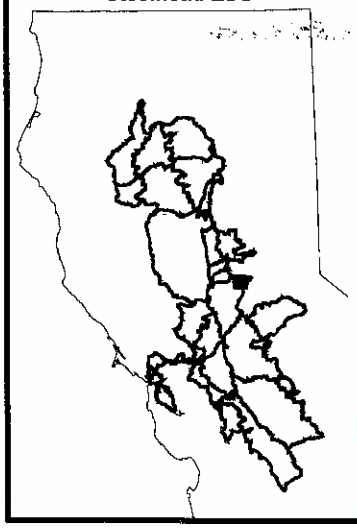
*Source: California Environmental Resources Evaluation System (CERES), 1999

Note: This map is for general reference only

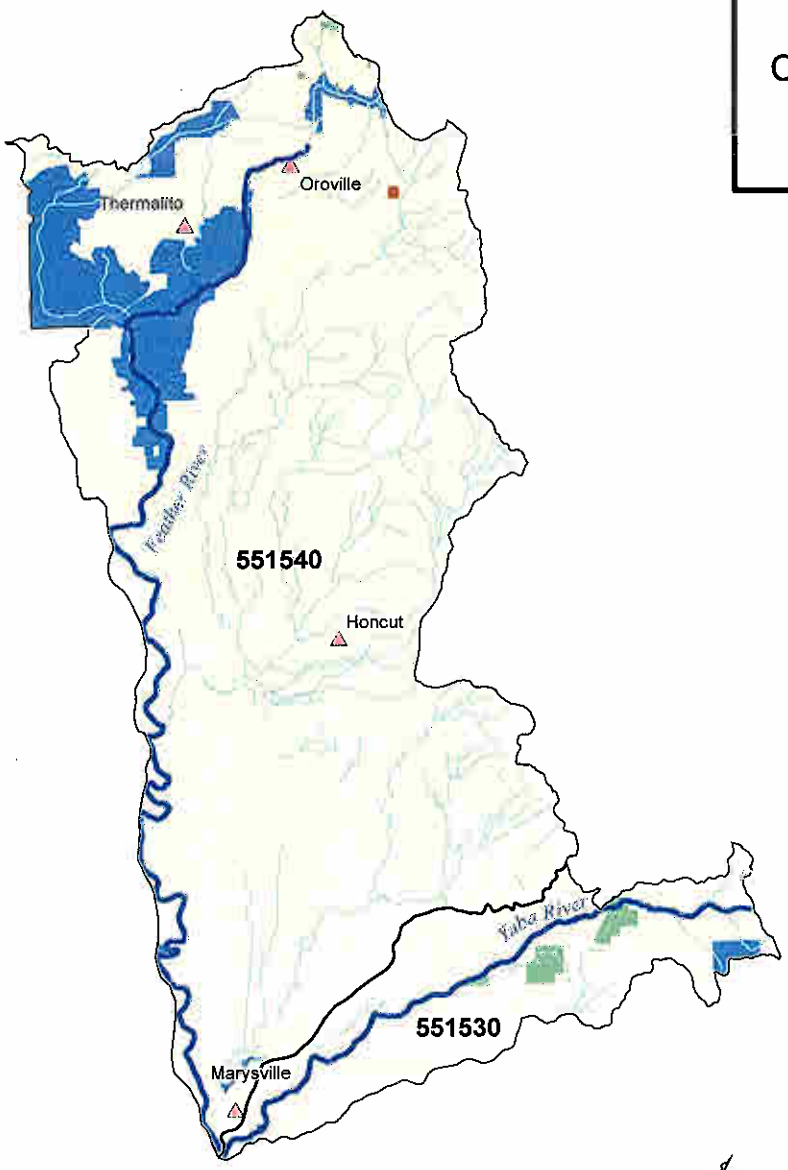
N

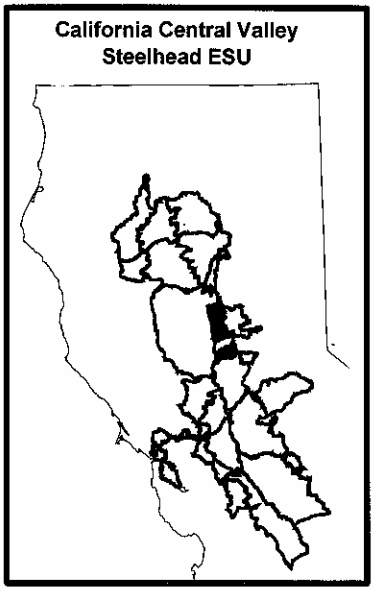
0 0.5 1 2 3 4 5 Miles

California Central Valley Steelhead ESU



Land Ownership
California Central Valley Steelhead
Marysville HU (5515)





- Cities
- Steelhead Presence Streams
- Hydrologic Unit Boundary

Land Ownership*

- Tribal
- Federal
- State/Local
- Private/Other
- Water

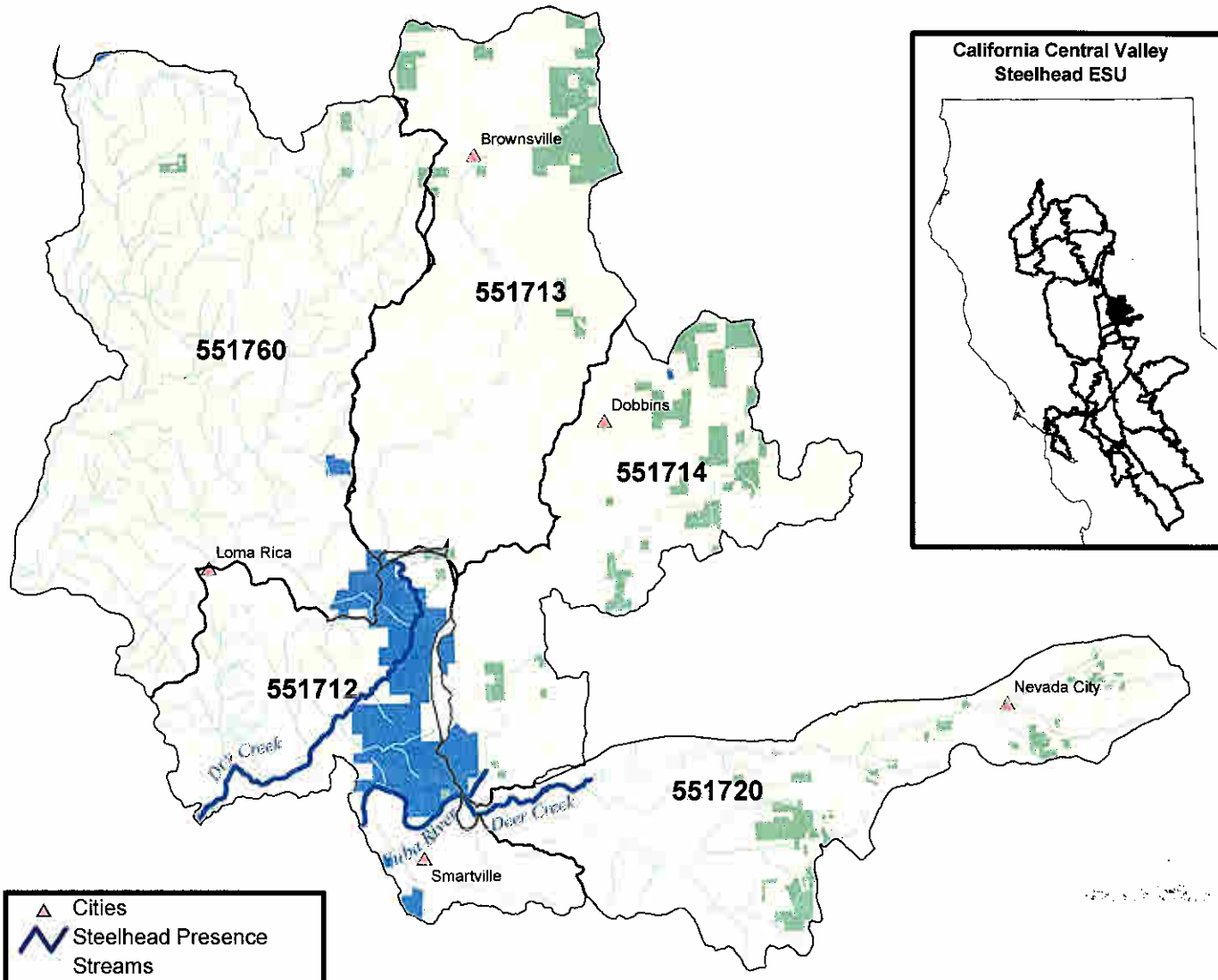
*Source: California Environmental Resources Evaluation System (CERES), 1999

Note: This map is for general reference only

N

0 2.5 5 Miles

Land Ownership
California Central Valley Steelhead
Yuba River HU (5517)



Cities
Steelhead Presence Streams
Hydrologic Unit Boundary

Land Ownership*

Tribal
Federal
State/Local
Private/Other
Water

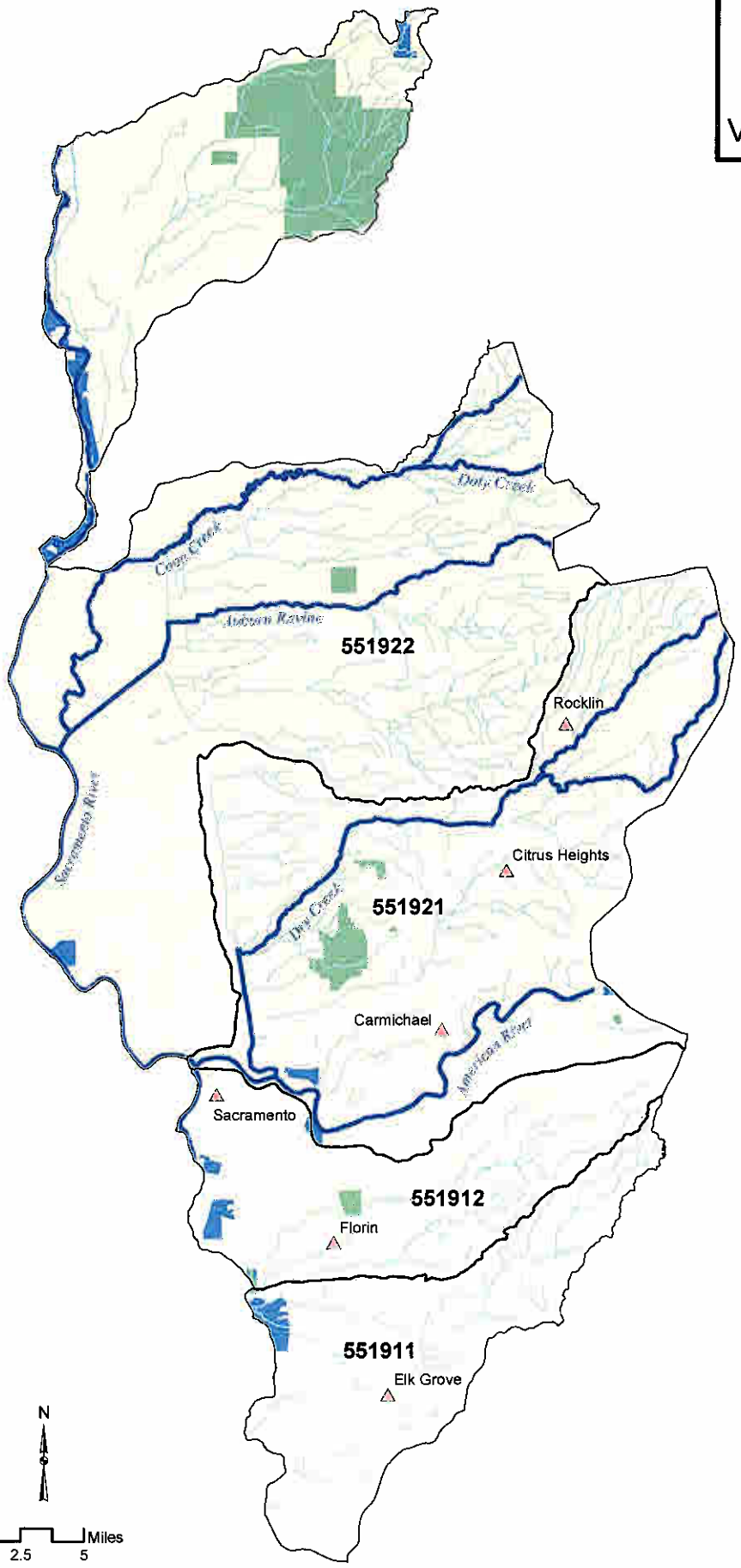
*Source: California Environmental Resources Evaluation System (CERES), 1999

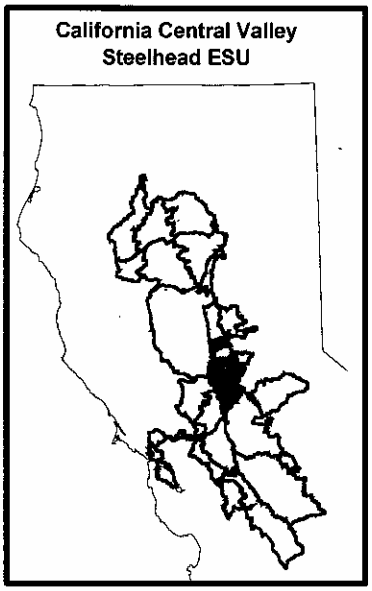
Note: This map is for general reference only

N

0 2.5 5 10 Miles

Land Ownership
California Central Valley Steelhead
Valley-American HU (5519)





Cities
Steelhead Presence Streams
Hydrologic Unit Boundary

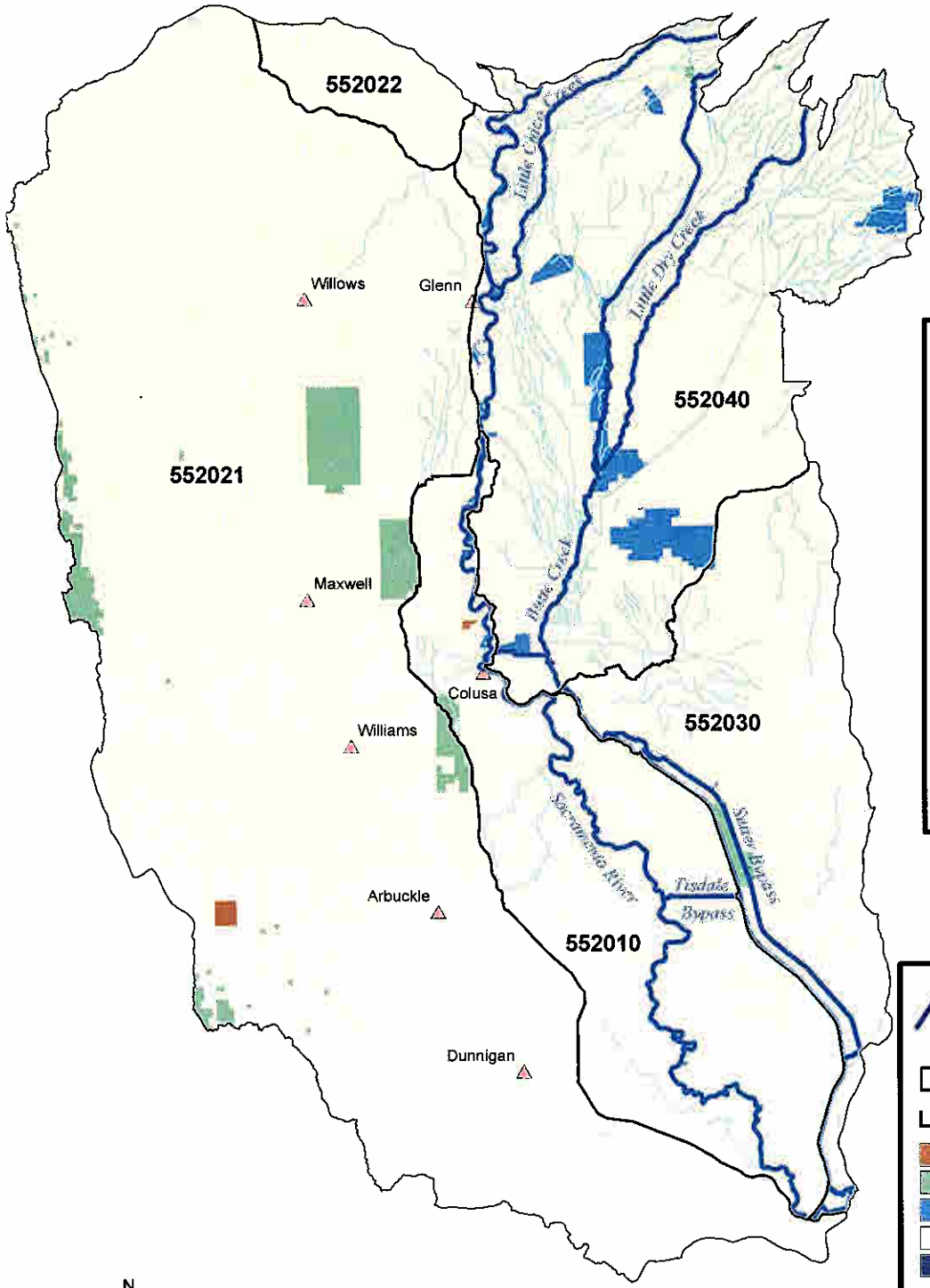
Land Ownership*

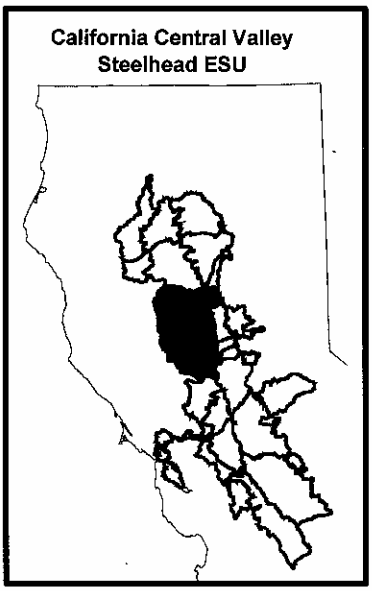
Tribal
Federal
State/Local
Private/Other
Water

*Source: California Environmental Resources Evaluation System (CERES), 1999

Note: This map is for general reference only

Land Ownership
California Central Valley Steelhead
Colusa Basin HU (5520)



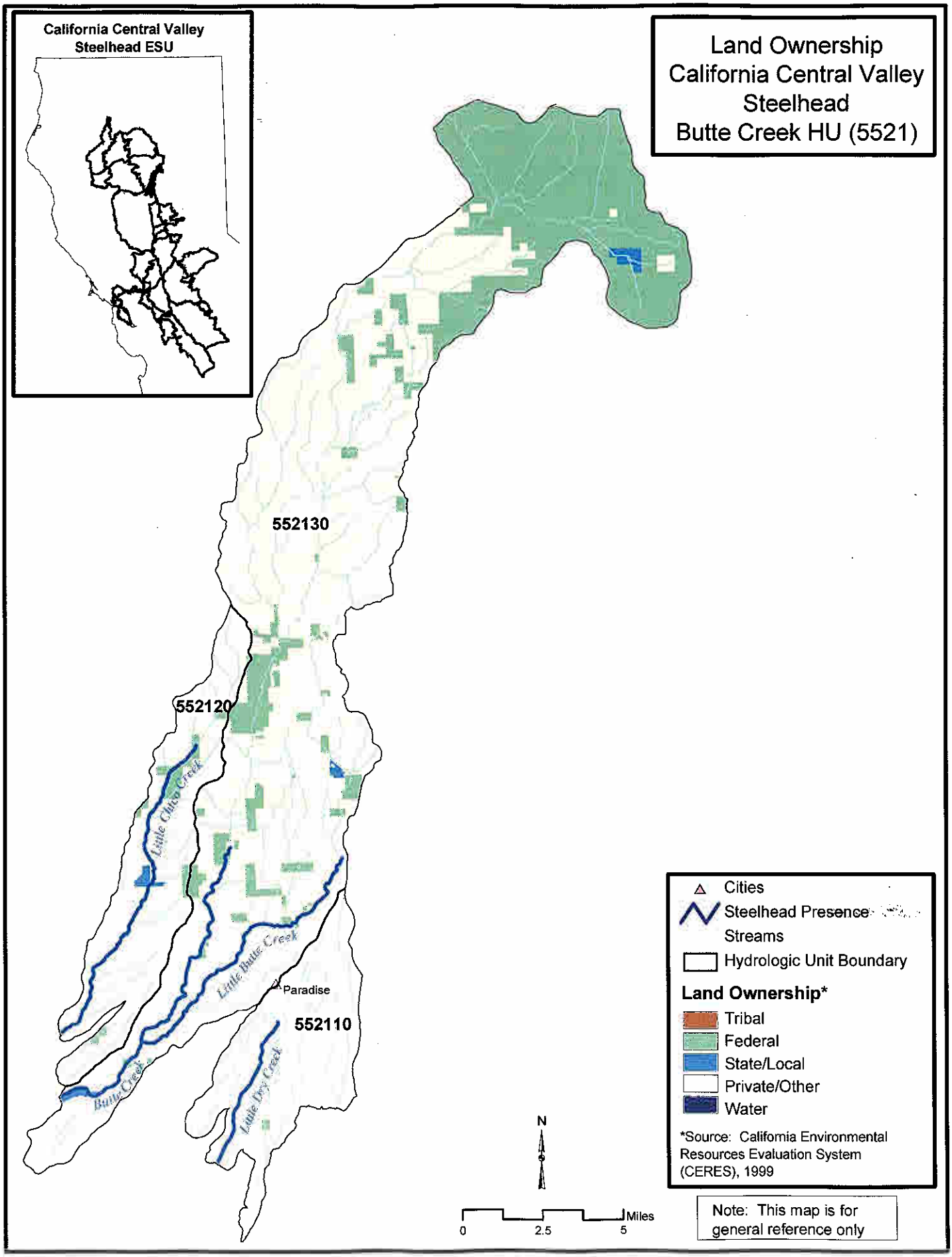


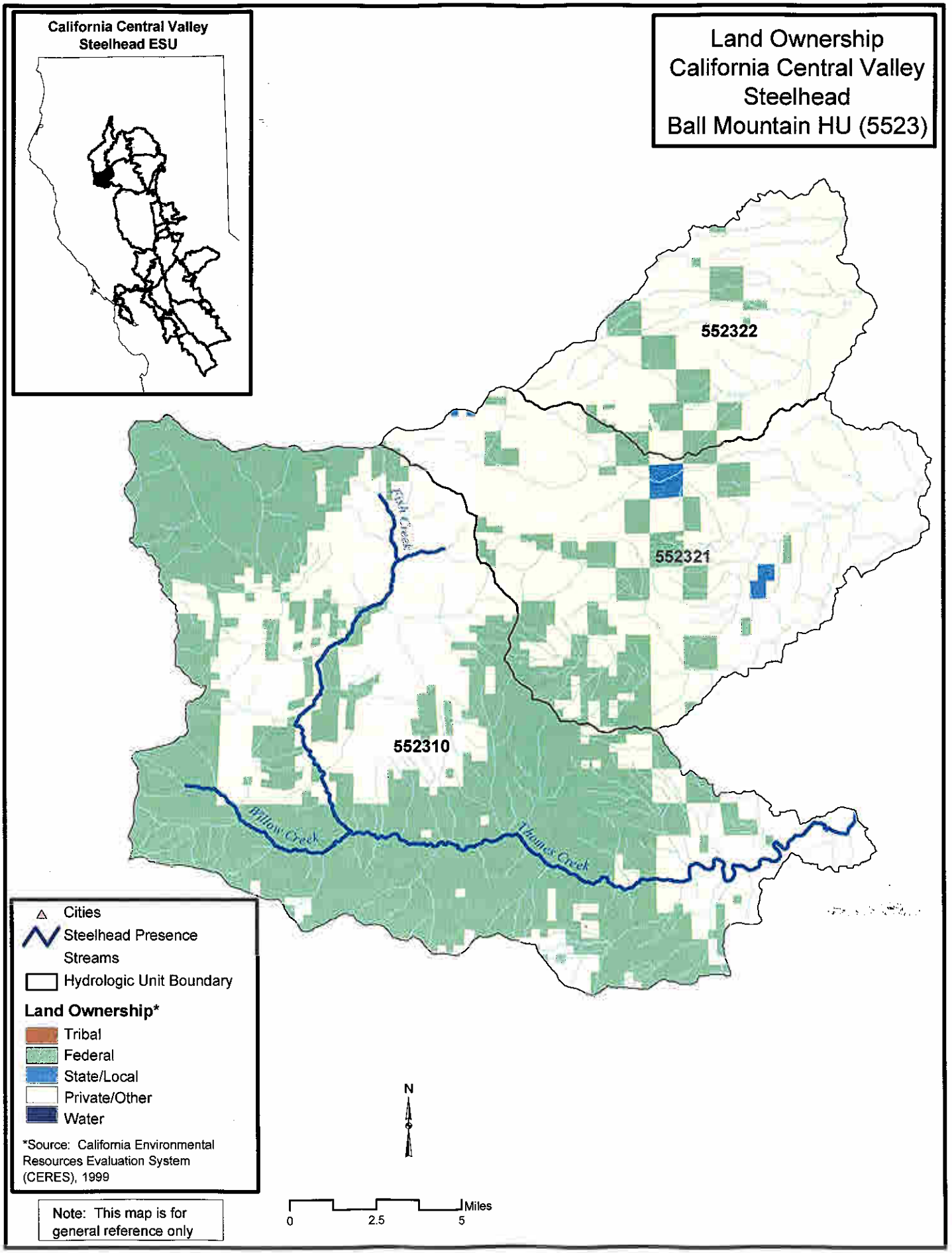
Cities
Steelhead Presence Streams
Hydrologic Unit Boundary

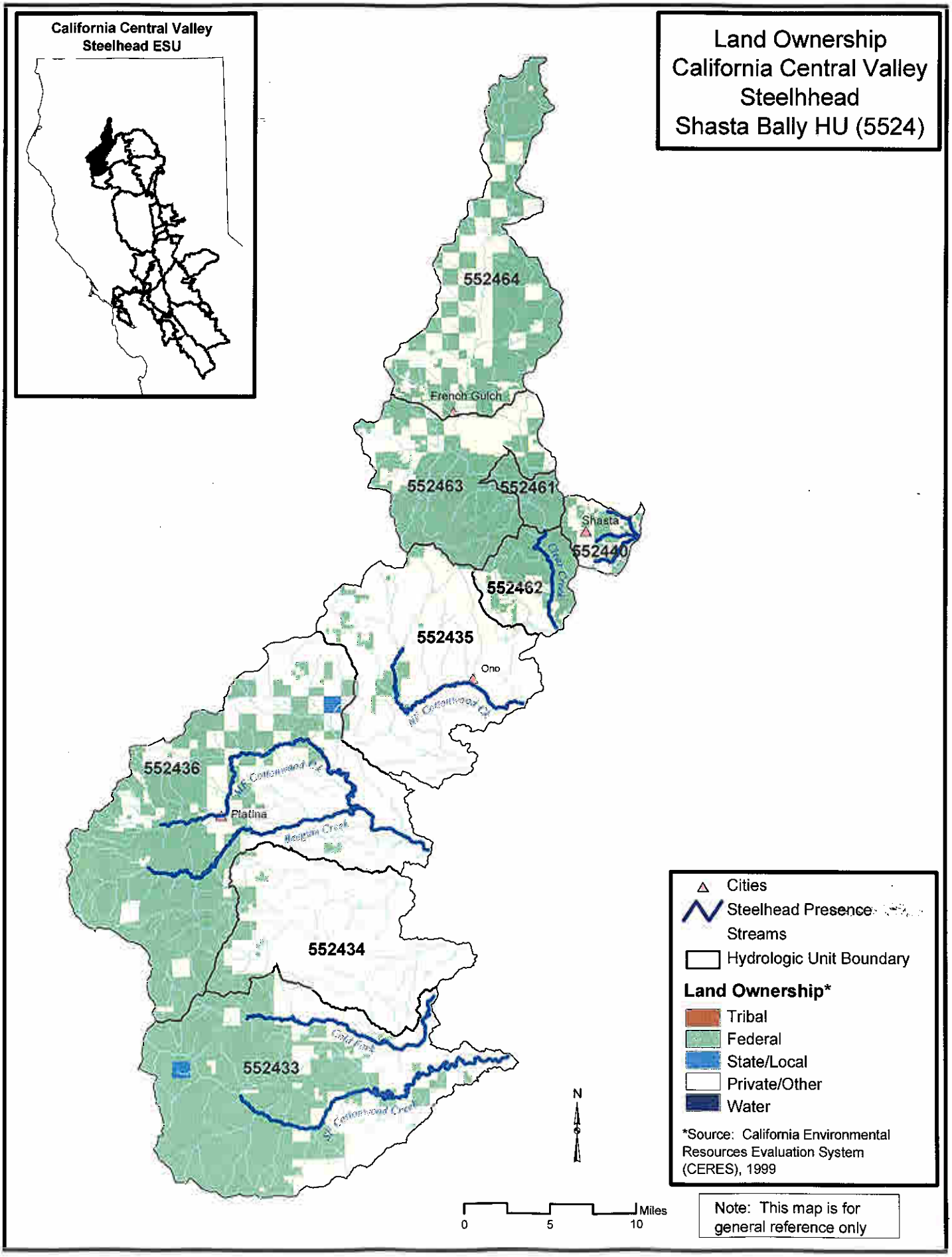
Land Ownership*
- Tribal
- Federal
- State/Local
- Private/Other
- Water

*Source: California Environmental Resources Evaluation System (CERES), 1999

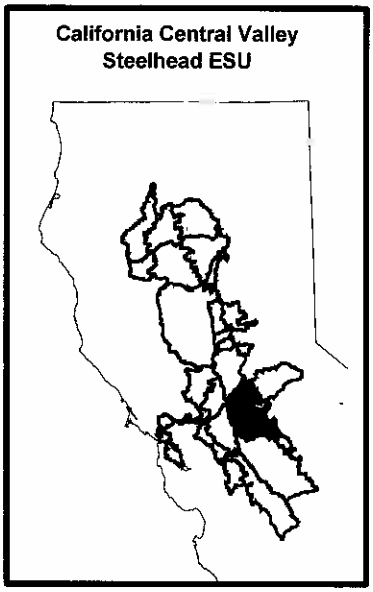
Note: This map is for general reference only


California Central Valley Steelhead ESU
Land Ownership
California Central Valley
Steelhead
Butte Creek HU (5521)
552130
552120
552110
Little Chico Creek
Little Butte Creek
Butte Creek
Little Dry Creek
Paradise
Cities
Steelhead Presence
Streams
Hydrologic Unit Boundary
Land Ownership*
Tribal
Federal
State/Local
Private/Other
Water
*Source: California Environmental Resources Evaluation System (CERES), 1999
N
0
2.5
5
Miles
Note: This map is for general reference only


California Central Valley Steelhead ESU
Land Ownership
California Central Valley
Steelhead
Ball Mountain HU (5523)
552322
552321
552310
Fish Creek
Willow Creek
Thomes Creek
Cities
Steelhead Presence
Streams
Hydrologic Unit Boundary
Land Ownership*
Tribal
Federal
State/Local
Private/Other
Water
*Source: California Environmental Resources Evaluation System (CERES), 1999
Note: This map is for general reference only
N
0
2.5
5
Miles


California Central Valley Steelhead ESU
Land Ownership
California Central Valley
Steelhhead
Shasta Bally HU (5524)
552464
French Gulch
552463
552461
Shasta
552440
552462
552435
Ono
552436
Platina
552434
552433
Cities
Steelhead Presence
Streams
Hydrologic Unit Boundary
Land Ownership*
Tribal
Federal
State/Local
Private/Other
Water
*Source: California Environmental Resources Evaluation System (CERES), 1999
N
0
5
10
Miles
Note: This map is for general reference only

Land Ownership
California Central Valley
Steelhead
North Valley Floor HU (5531)



553112

553111

553120

553130

553140

Cosumnes River

Dry Creek

Galt

Mokelumne River

Lodi

Mosher Creek

Calaveras River

Mormon Slough

Stockton

Cities

Steelhead Presence Streams

Hydrologic Unit Boundary

Land Ownership*

Tribal

Federal

State/Local

Private/Other

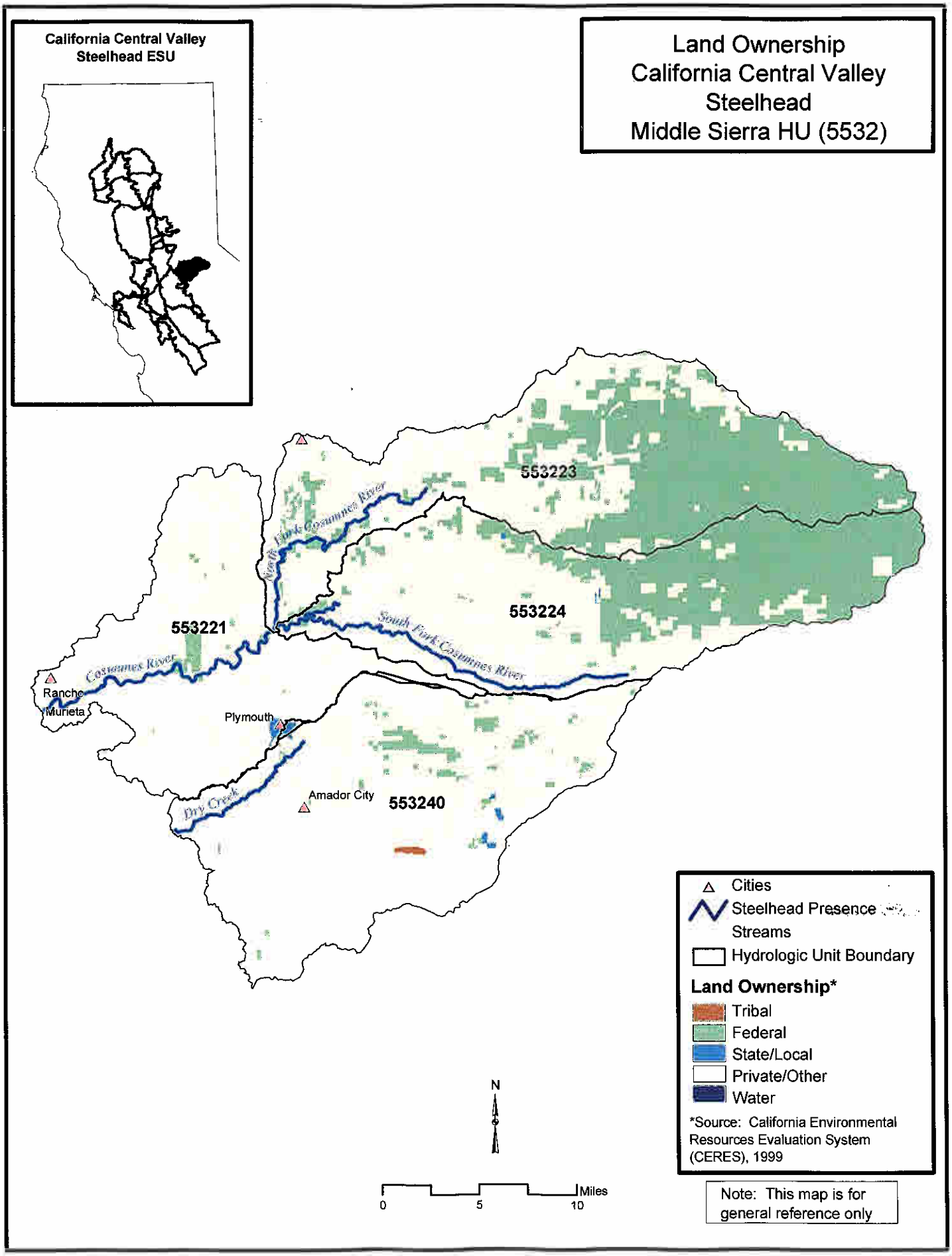
Water

*Source: California Environmental Resources Evaluation System (CERES), 1999

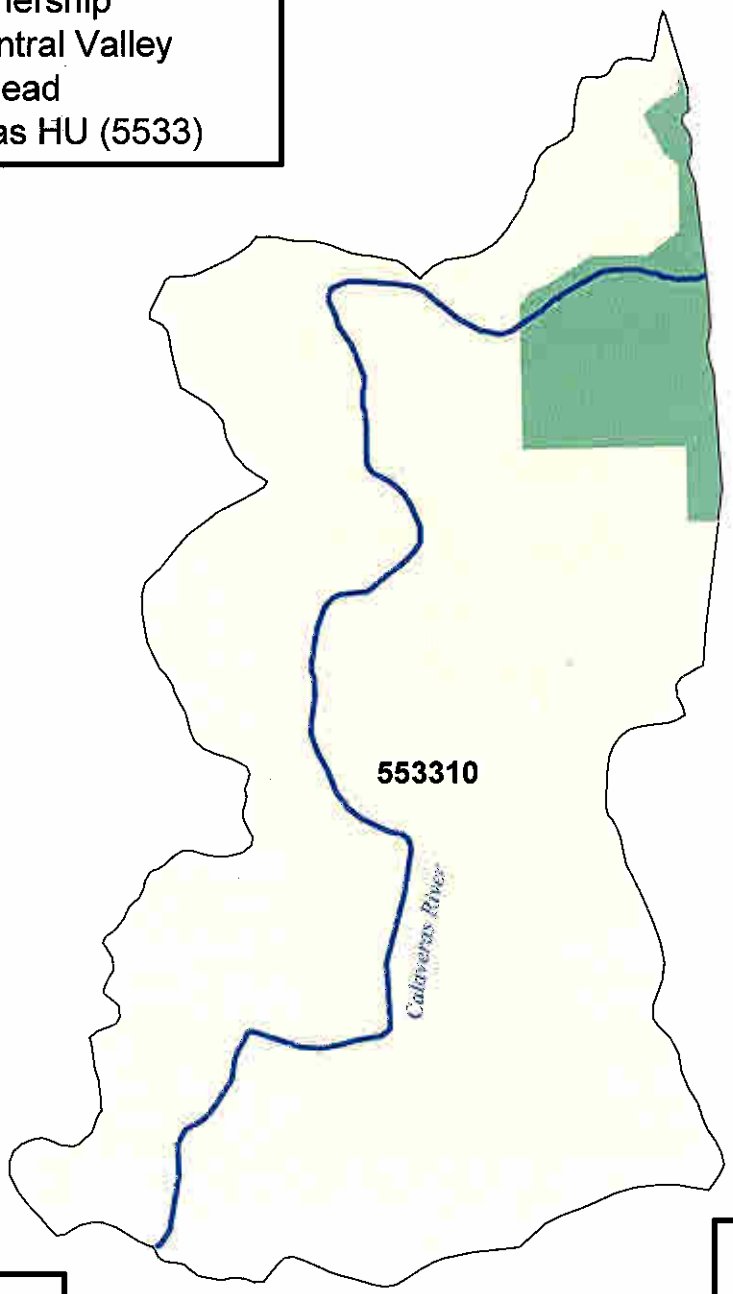
N

0 5 10 Miles

Note: This map is for general reference only


California Central Valley Steelhead ESU
Land Ownership
California Central Valley
Steelhead
Middle Sierra HU (5532)
553223
553224
553221
553240
North Fork Cosumnes River
South Fork Cosumnes River
Cosumnes River
Dry Creek
Rancho Murieta
Plymouth
Amador City
Cities
Steelhead Presence
Streams
Hydrologic Unit Boundary
Land Ownership*
Tribal
Federal
State/Local
Private/Other
Water
*Source: California Environmental Resources Evaluation System (CERES), 1999
N
0
5
10
Miles
Note: This map is for general reference only

Land Ownership
California Central Valley
Steelhead
Upper Calaveras HU (5533)



- Cities
- Steelhead Presence Streams
- Hydrologic Unit Boundary

Land Ownership*

- Tribal
- Federal
- State/Local
- Private/Other
- Water

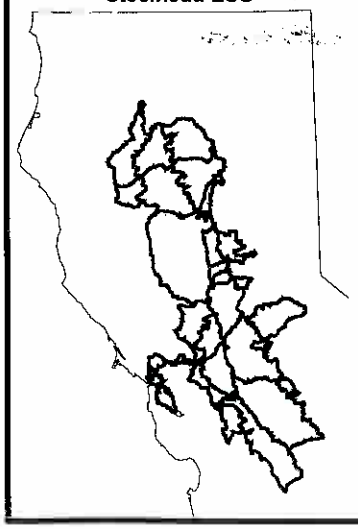
*Source: California Environmental Resources Evaluation System (CERES), 1999

Note: This map is for general reference only

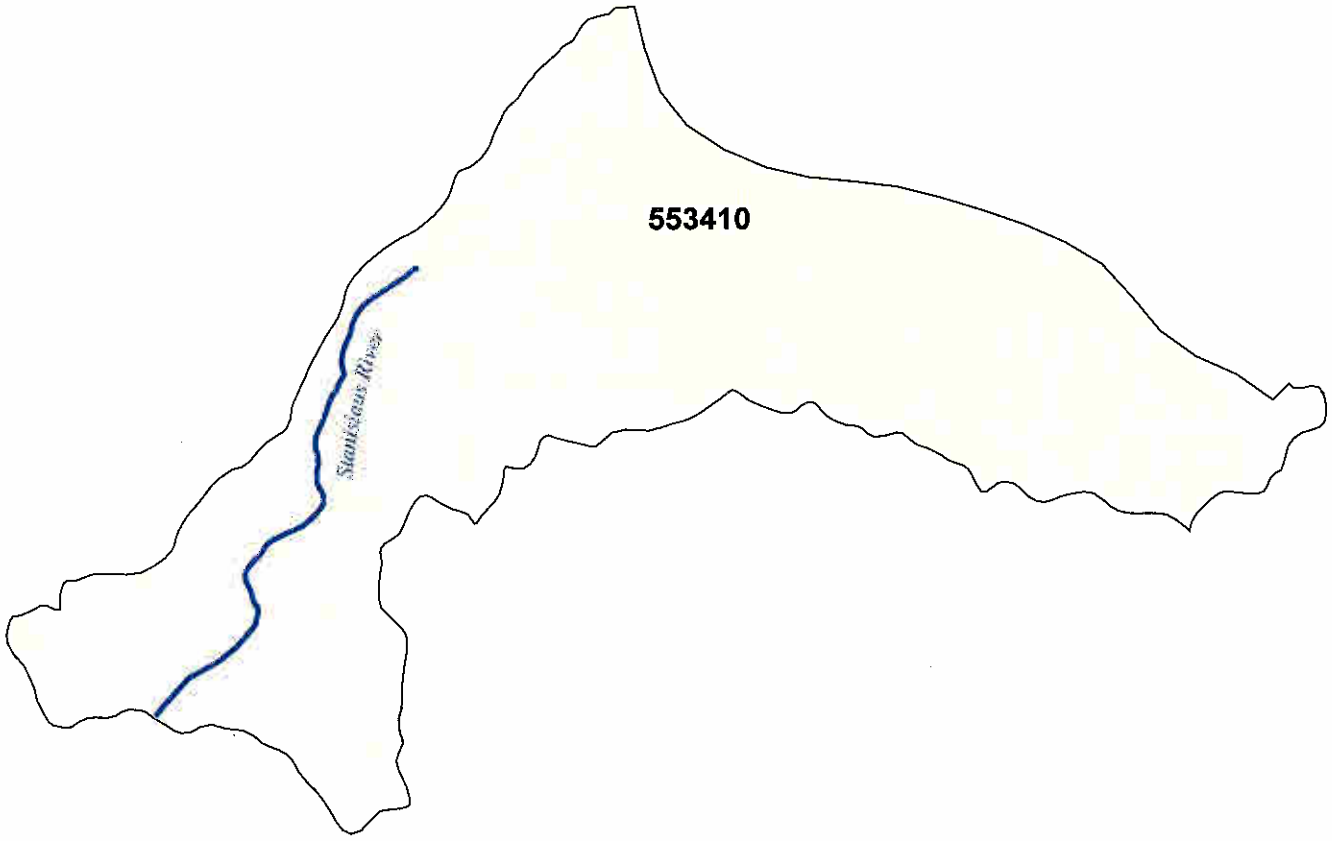
N

0 0.125 0.25 0.5 0.75 1 Miles

California Central Valley Steelhead ESU



Land Ownership
California Central Valley
Steelhead
Stanislaus River HU (5534)



- Cities
- Steelhead Presence Streams
- Hydrologic Unit Boundary

Land Ownership*

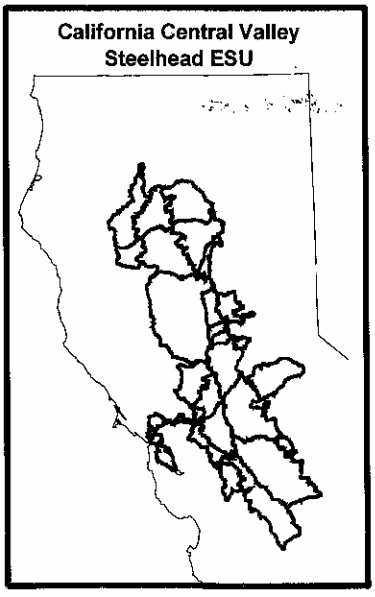
- Tribal
- Federal
- State/Local
- Private/Other
- Water

*Source: California Environmental Resources Evaluation System (CERES), 1999

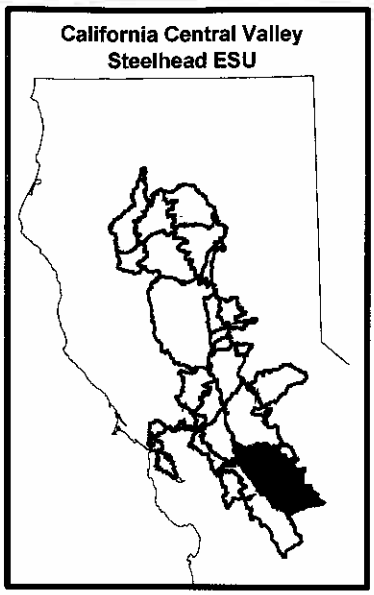
Note: This map is for general reference only

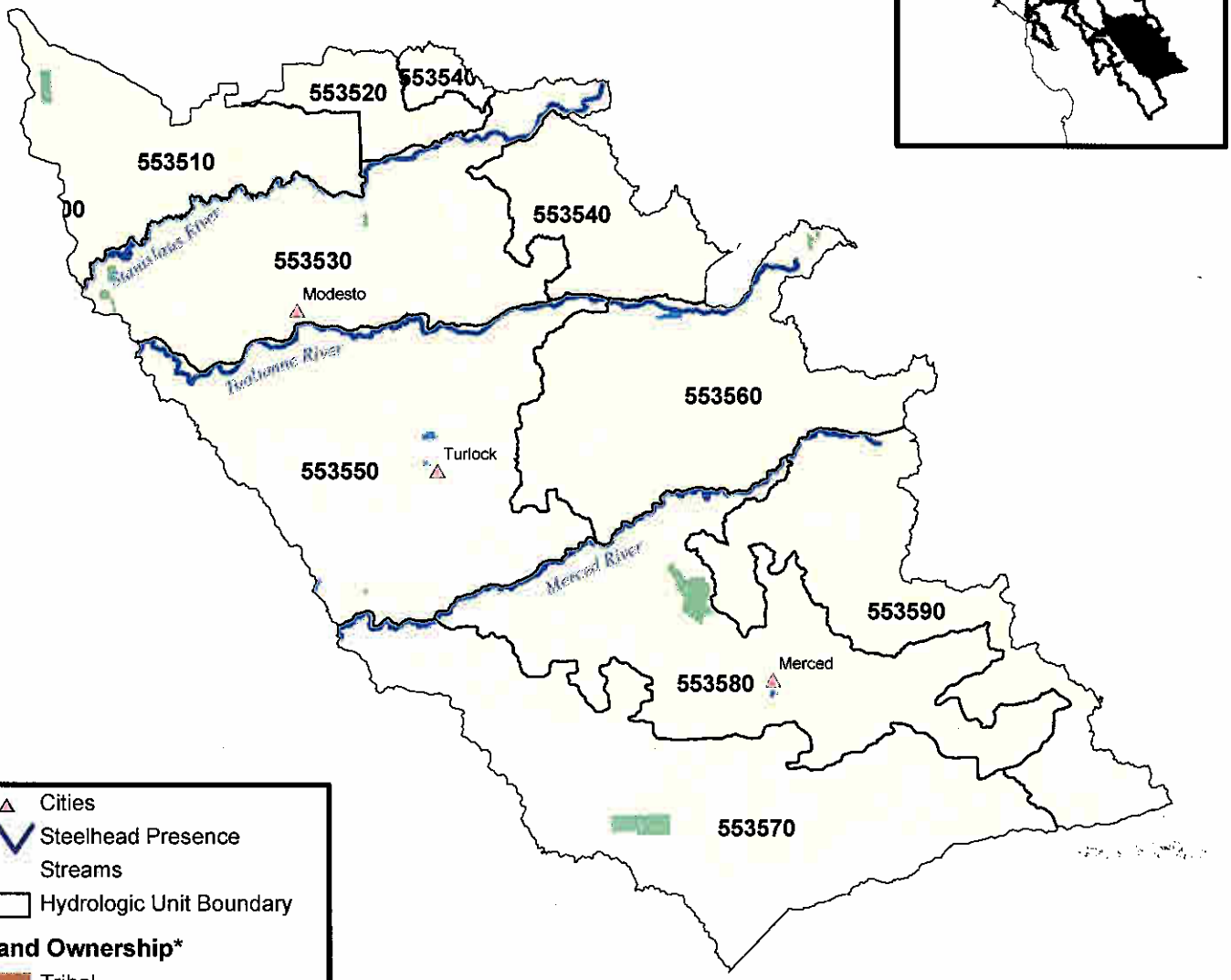
N

0 0.5 1 2 Miles



Land Ownership
California Central Valley
Steelhead
San Joaquin Valley Floor HU (5535)





- Cities
- Steelhead Presence Streams
- Hydrologic Unit Boundary

Land Ownership*

- Tribal
- Federal
- State/Local
- Private/Other
- Water

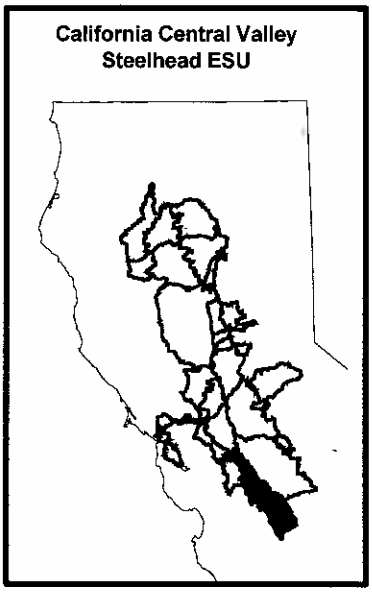
*Source: California Environmental Resources Evaluation System (CERES), 1999

Note: This map is for general reference only

N

0 2.5 5 10 Miles

Land Ownership
California Central Valley Steelhead
Delta-Mendota Canal HU (5541)



Patterson

San Joaquin River

554110

Gustine

554120

Cities
Steelhead Presence Streams
Hydrologic Unit Boundary

Land Ownership*

Tribal
Federal
State/Local
Private/Other
Water

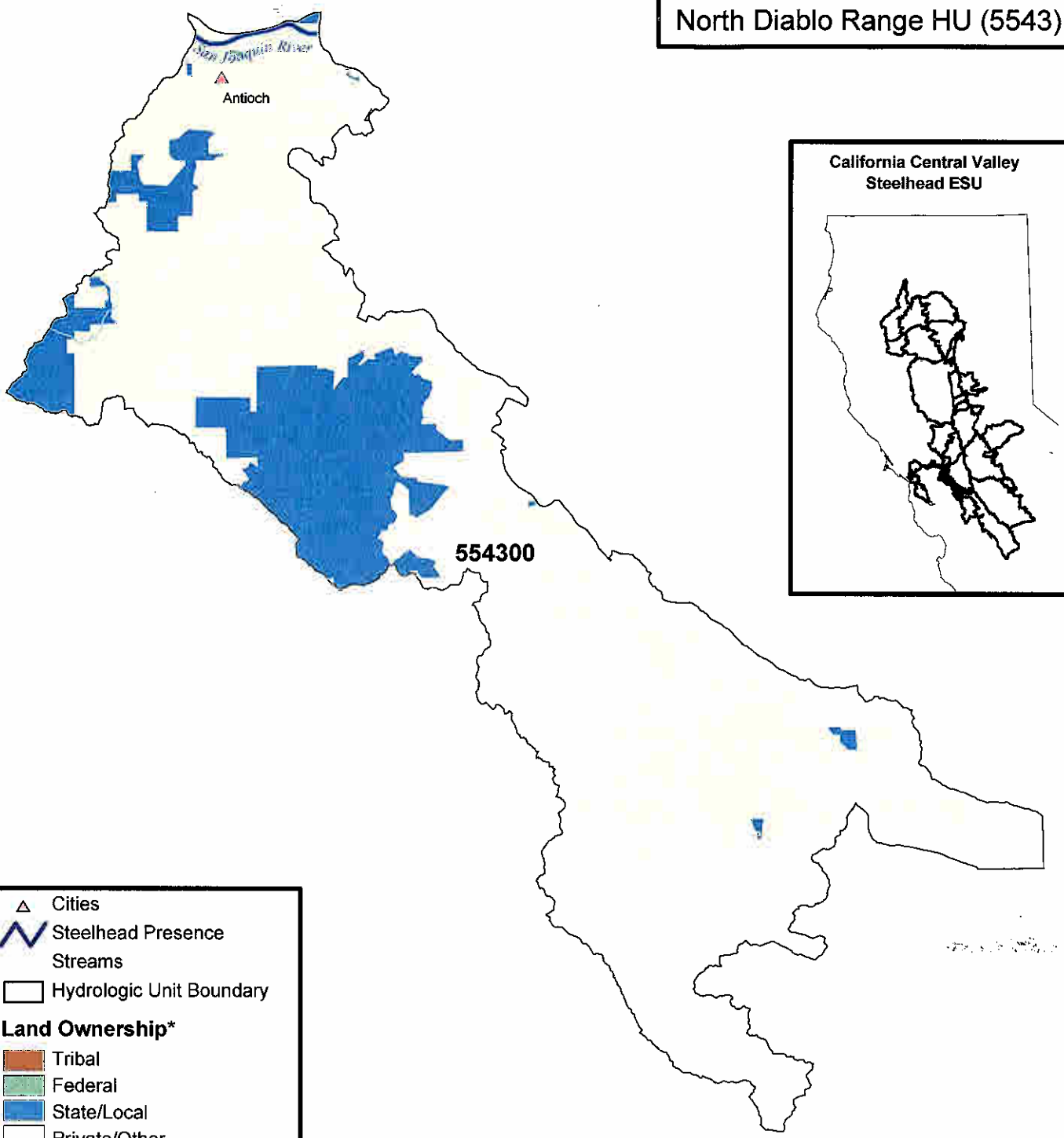
*Source: California Environmental Resources Evaluation System (CERES), 1999

Note: This map is for general reference only

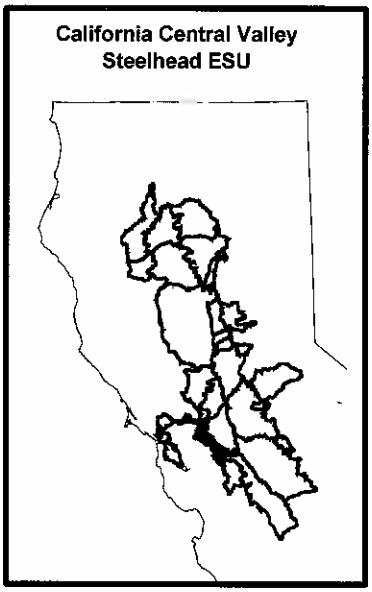
N

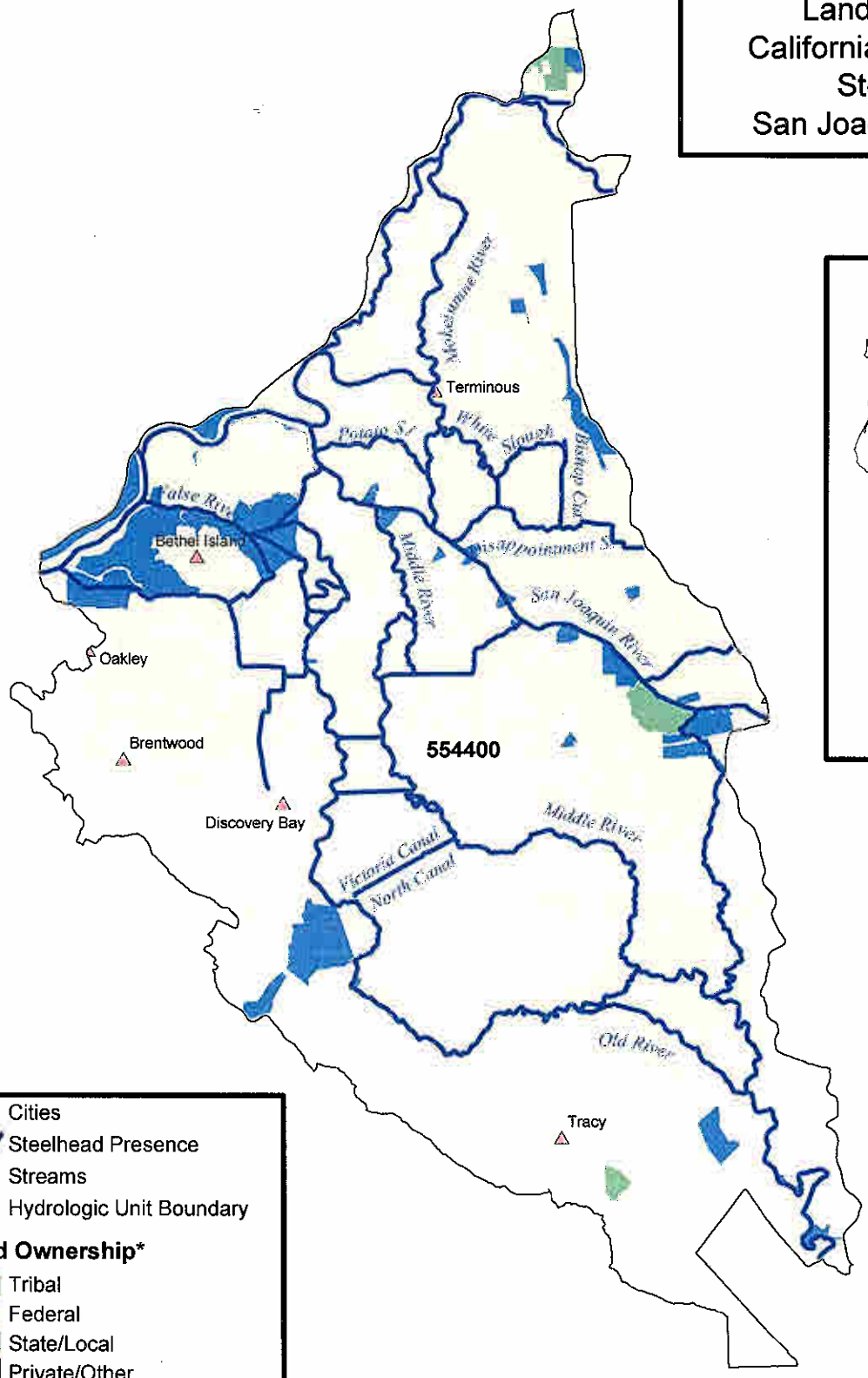
0 2.5 5 10 Miles

Land Ownership
California Central Valley Steelhead
North Diablo Range HU (5543)



Land Ownership
California Central Valley
Steelhhead
San Joaquin HU (5544)





- Cities
- Steelhead Presence Streams
- Hydrologic Unit Boundary

Land Ownership*

- Tribal
- Federal
- State/Local
- Private/Other
- Water

*Source: California Environmental Resources Evaluation System (CERES), 1999

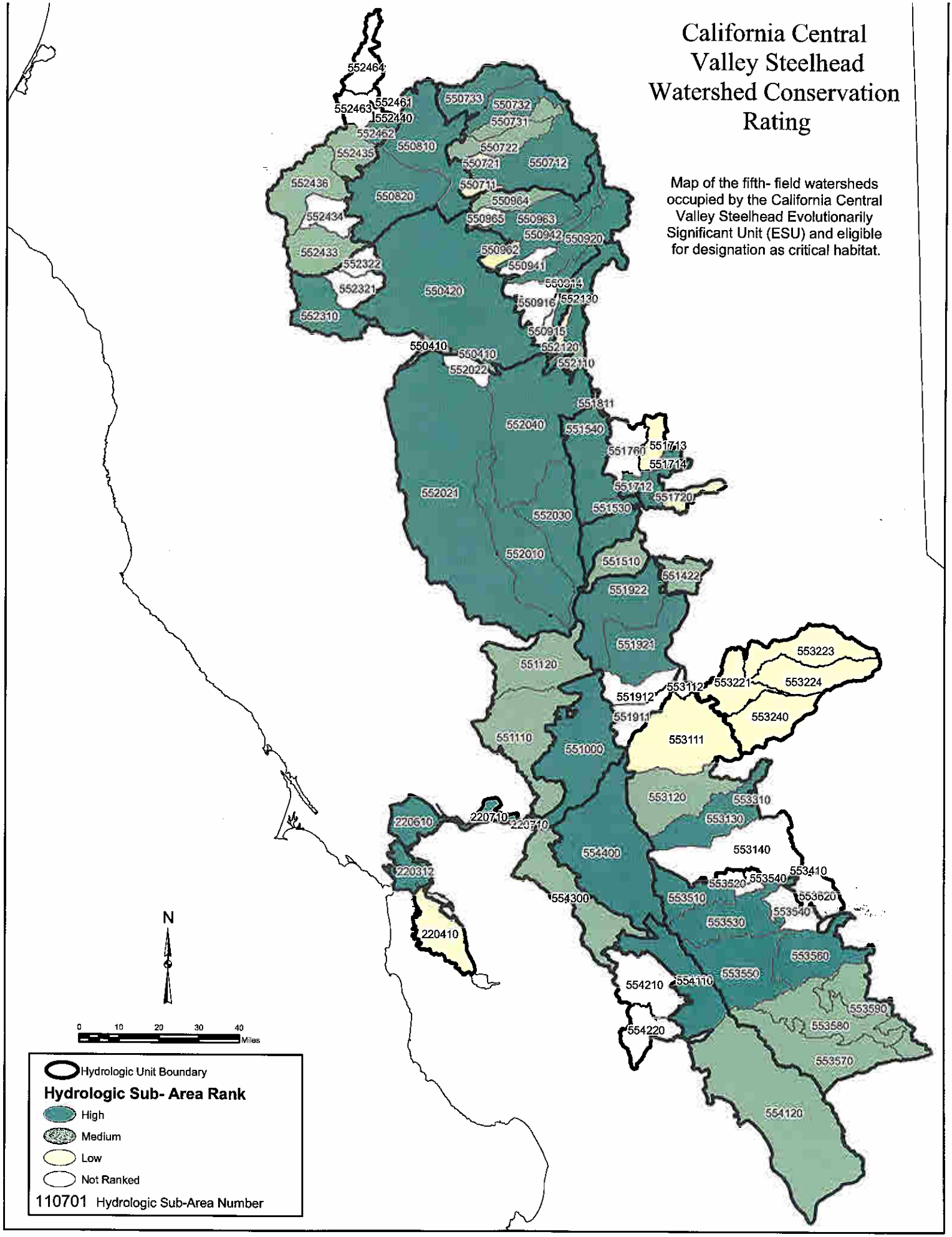
Note: This map is for general reference only

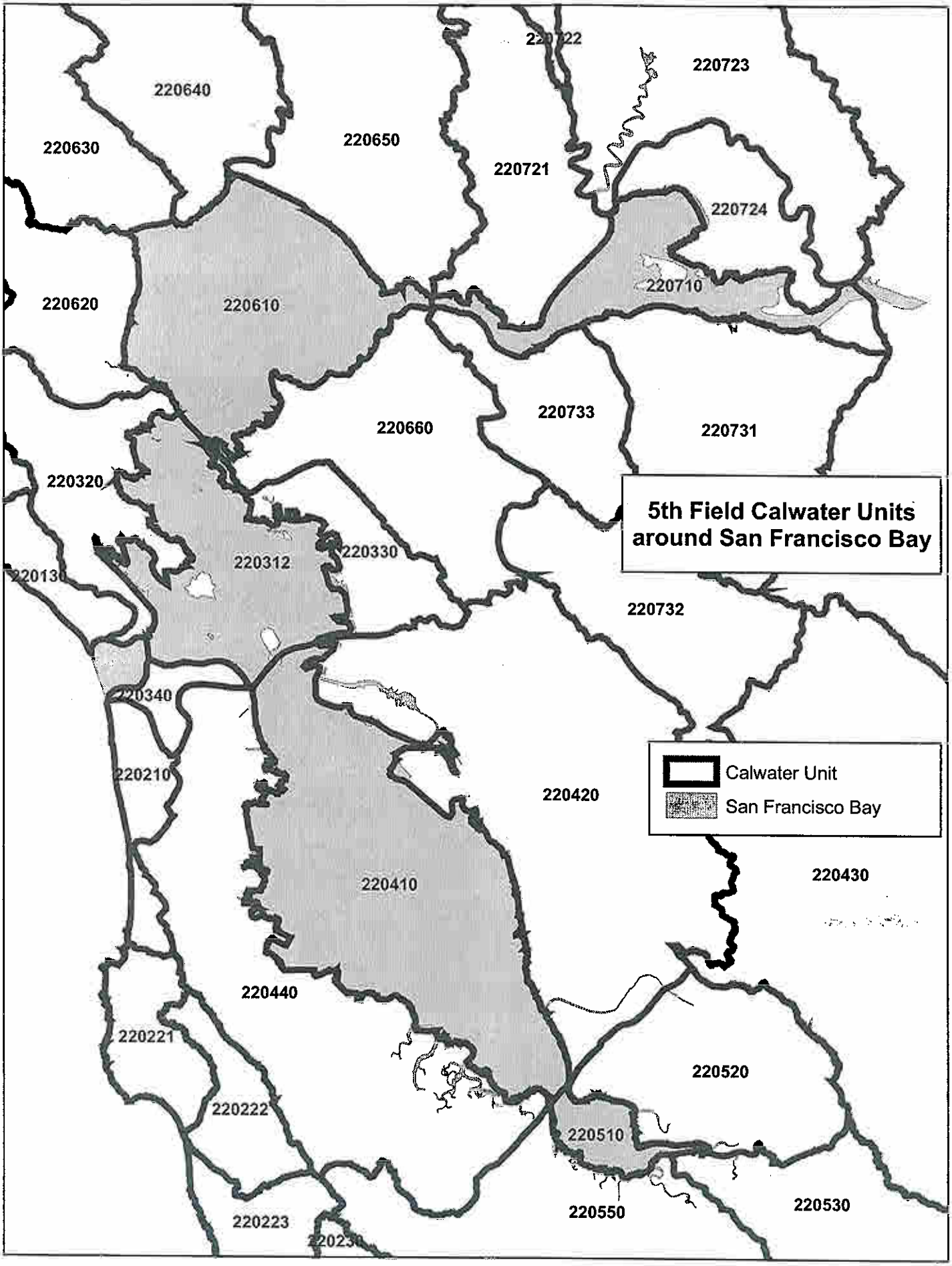
N

0 5 10 Miles

California Central Valley Steelhead Watershed Conservation Rating

Map of the fifth- field watersheds occupied by the California Central Valley Steelhead Evolutionarily Significant Unit (ESU) and eligible for designation as critical habitat.




220640
220630
220650
220721
220723
220724
220710
220620
220610
220660
220733
220731
220320
220312
220330
220130
220732
220340
220210
220420
220410
220430
220440
220221
220520
220222
220510
220223
220550
220530
5th Field Calwater Units around San Francisco Bay
Calwater Unit
San Francisco Bay

Map G23. Preliminary CHART Ratings of Conservation Value for Calwater HSA Watersheds occupied by the Central Valley Steelhead ESU